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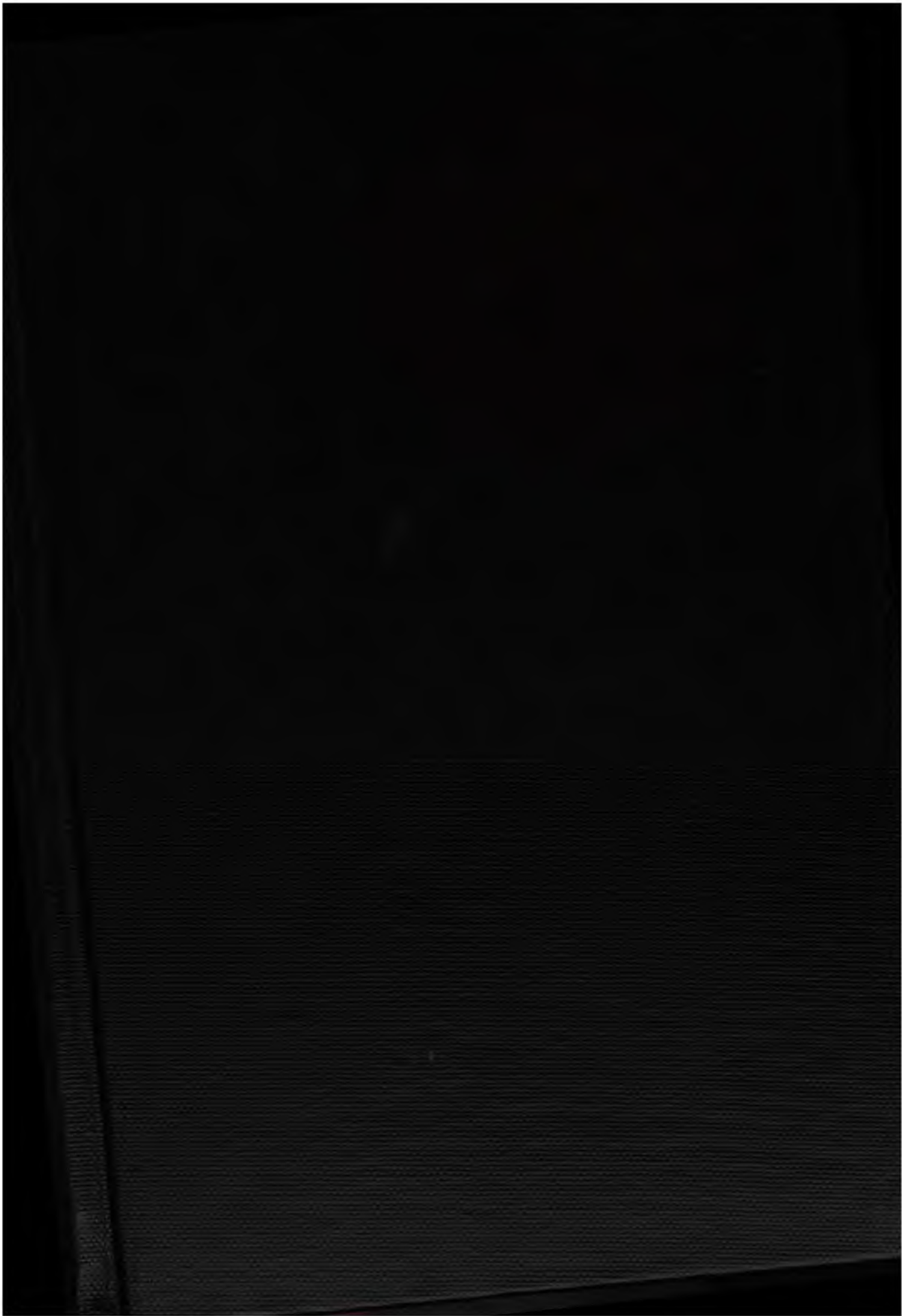
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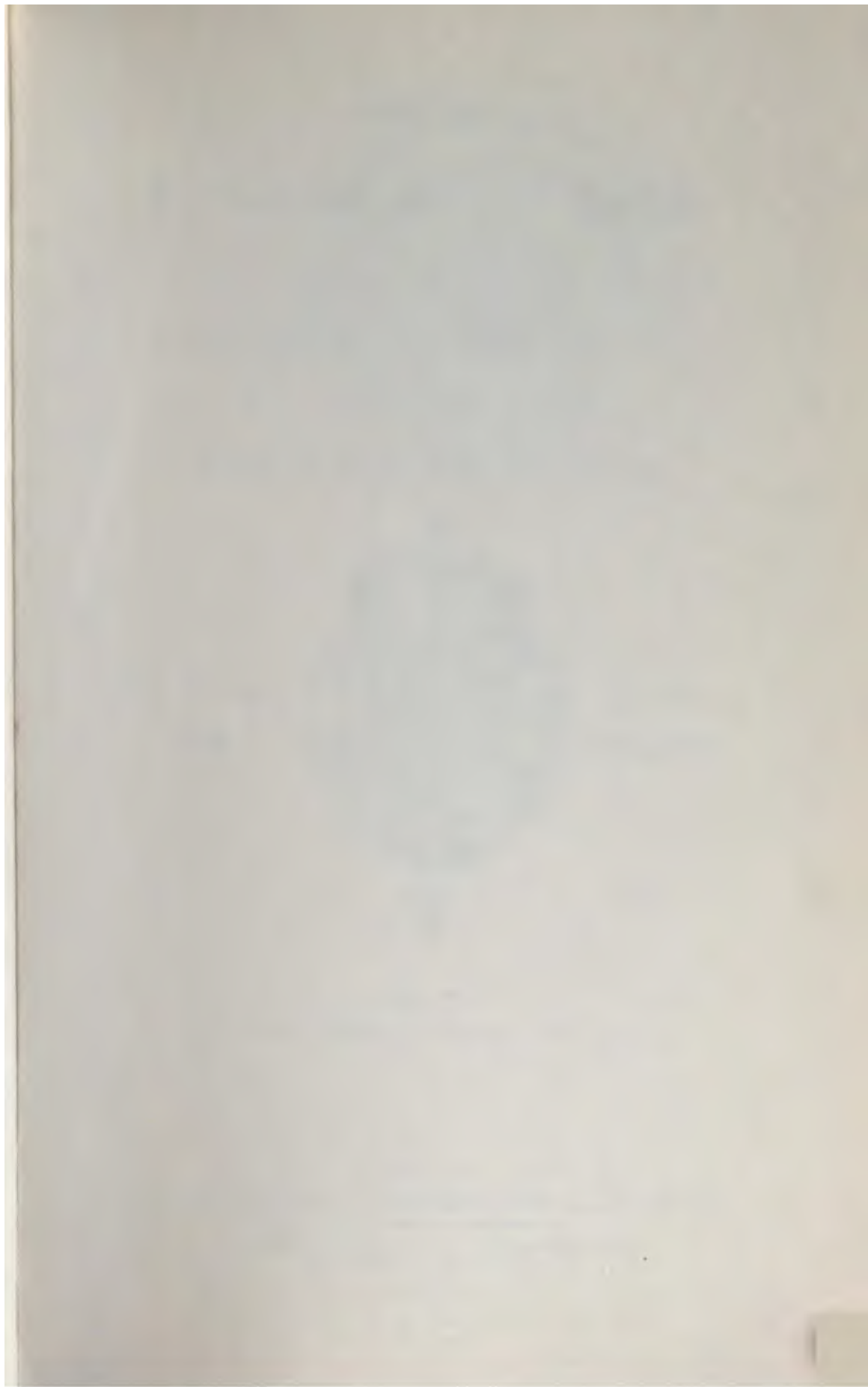
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OFFICIAL
Descriptive and Illustrated Catalogue
OF THE
London GREAT EXHIBITION
OF THE
WORKS OF INDUSTRY OF ALL NATIONS.

By Authority
of the



Royal
Commission.

PART IV.
COLONIES.—FOREIGN STATES. DIVISION I.

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CONTRACTORS TO THE ROYAL COMMISSION
29 NEW BRIDGE STREET, BLACKFRIARS, AND AT THE
EXHIBITION BUILDING.

1851.

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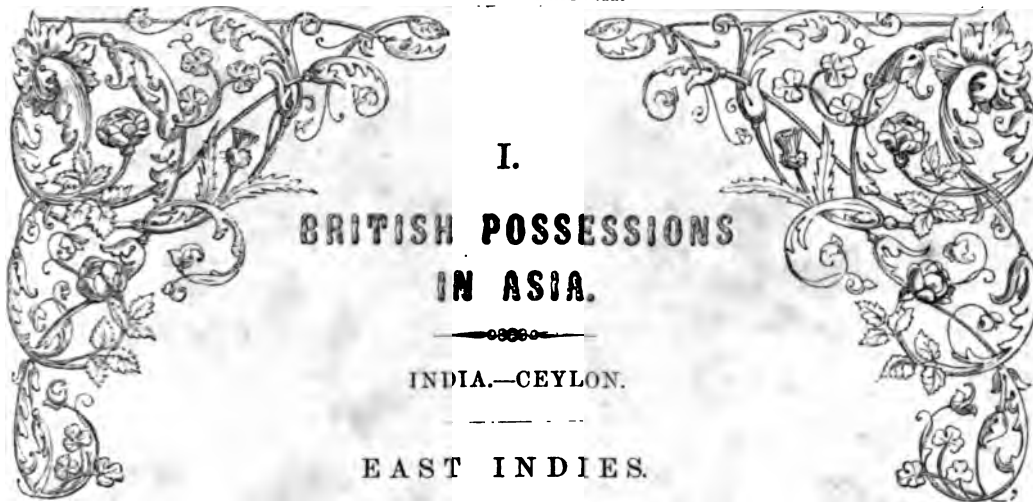
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OFFICIAL
Descriptive and Illustrated Catalogue.

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BRITISH COLONIES AND DEPENDENCIES.





NORTH AREAS, C. 33; D. E. 33 TO 35; F. 33 TO 36; G. H. I. 34 TO 36.  
 SOUTH AREAS, J. L. M. N. 34 TO 36; O. P. 33 TO 36; Q. R. 34 AND 35.

"INDIA, vast in extent and diversified in surface, is remarkable as the cradle of one, at least, of the nations who earliest practised the arts and cultivated the sciences which characterise civilization, and from whence these travelled to the West, and, perhaps, also to the East. Its present inhabitants continue to venerate sciences which they know only by name, and practise arts of which they know not the principles; and this with a skill not only remarkable for the early period at which it attained perfection, but also for the manner in which it has remained stationary for so many ages. But when Commerce was in its infancy, or dealt only in the most precious commodities, these arts could not have been practised unless India had contained within itself all the raw materials which Art could convert into useful articles or elegant ornaments. Without cotton, the so-called 'webs of woven air' could have had no existence. Without numerous barks, woods, and flowers, dyeing could not have been practised, and calico-printing would probably not have been invented. If an Indigofera had not been indigenous, indigo would never have derived its name from India, nor have afforded us the proof, in the stripe of mummy-cloth, of the early commercial intercourse between its native country and Egypt. Neither would sugar have been arranged by the Greeks with honeys, nor the Indians described as those who 'bibunt tenera dulces ab arundine succos,' unless they had had the cane-like saccharum as a plant of their country. Neither in Persia would the proverb of 'giving an Indian answer,' have been considered equivalent to a cut with an Indian sword, unless the Hindoos had possessed the ore which enabled them to manufacture their far-famed *not* steel; and gunpowder is likely to have been invented at an early age only in a country where 'villanous salpêtre' is abundant.

"Besides these, India possesses an immense number, both of animal and of vegetable, as well as of mineral substances, well fitted for arts and manufactures of every kind; and the country has often been described as capable of producing, within its own limits, almost all the useful products of every other quarter of the globe.

"There appear only two available methods by which a manufacturer can be made acquainted with the existence of foreign products likely to be useful in his business; one is, by the collection of such information as is obtainable respecting them, and arranging it according to the most prominent properties of such substances. When these are so arranged, it is comparatively easy for any one to ascertain whether India, or any other foreign country, contains any useful or ornamental product which might be employed instead of, and be cheaper than, that already in use.

"But with the most simple arrangement and clearly-conveyed information the manufacturer generally would feel little interest about unknown natural products and their strange names, unless he had an opportunity of seeing and of personally examining them. Then a glance of his practised eye, or the slightest handling of a new substance, informs him whether it is likely to be of use for his purposes. The collection, therefore, of such substances, and arranging them also, as above, according to their properties, is the only method calculated at once to interest the public and to give such confidence to the manufacturer as to induce him to submit them to trial. Their exhibition, therefore, is calculated not only to be of great use to the manufacturer, but of essential benefit to such countries as possess many little-known products possessed of valuable properties, and procurable in large quantities at a cheap rate, if a demand could be created for them.

"As India produced the raw material and manufactured it into a costly article, gold and silver have, from the earliest times, been required to purchase this combination of the gifts of nature with the creations of art; but mechanical invention has deprived the Hindoos of many of the advantages of their position, and they have, in a great measure, lost the commerce which they had themselves created, especially as some of their products were subjected to discriminating duties, which amounted to a prohibition on import into this country. Hence their foreign commerce has not advanced, as might have been anticipated, from the enjoyment in many parts of long-continued peace. But fashion, which here is as fickle as the wind, is in the East as steady as their customs, and has fortunately preserved some of their manufactures in their pristine excellence, and which, in any general collection of manufactures, would enable those of India still to hold a conspicuous place."

The foregoing quotations, from the observations written by the author of the present note on the first announcement, in the summer of 1849, of the Great Exhibition of 1851, indicate the nature of the contributions which were likely to be obtained from India, if measures were adopted suitable to the extent and natural riches of the distant country to be explored. The Court of Directors of the East India Company was one of

the earliest, if not the very first, of the public bodies of this country applied to, to support the Exhibition of the Works of Industry of all Nations. Messrs. Cole and Fuller, in their Report to His Royal Highness Prince Albert, stated that "The Chairman (the late Sir A. Galloway) cordially entered into the proposal, as well as Mr. Melvill, Mr. Peacock, and other officers of the India House, who remarked that there would be mutual advantages of great importance both to India and this country; to India, in calling forth new products, &c., and to this country in furnishing suggestions, &c., and new materials for manufactures." The Chairman shortly afterwards wrote: "I have the satisfaction of acquainting you, for the information of His Royal Highness, that the Court expressed their entire concurrence in the views which I then suggested, and that they will be prepared to give their cordial co-operation in carrying out the wishes of His Royal Highness, by obtaining from India such specimens of the products and manufactures of that country as may tend to illustrate its resources, and add to the interest of the Great National Exhibition, of which His Royal Highness is the patron."

The author of the present notice was desired to submit his views on the mode in which the collection should be made, as well as to prepare lists of the raw products and manufactured articles which it was desirable should be sent from India. As there was no time to be lost, from the great distance of the country, and the wide expanse between its several provinces, the author employed himself in the autumn of 1849 in preparing those lists, which were sent to India by the mail of the 7th of January, 1850, when the Court called the attention of the Indian Government to the occasion when "an opportunity will be afforded for the latent resources of distant provinces, and the skill of the least-known artist, to compete with the produce of the most favoured regions, or the works of the most successful genius.

"It is our wish, therefore, that the objects of the proposed Exhibition should be made known as generally as possible throughout India, and that our several Governments, and those of our servants whose station or pursuits may afford the opportunity for their so doing, should use their endeavours in order to the formation of such of the raw products and manufactures of India as may not only be interesting in a scientific point of view, but may also be subservient to the purposes of commerce and art.

"With regard to raw products, we would refer you to the annexed list and accompanying observations, which have been prepared, under our directions, by Professor Royle;\* and in connexion with the subject generally, we would request your attention to the letter from Mr. Taylor, formerly of your medical service in India, and which appears to us to contain some very useful suggestions." (This referred to the productions, both raw and manufactured, of Dacca and the neighbouring districts.)

This despatch and lists were published in the Government Gazettes of the three Presidencies. Translations of these documents were subsequently ordered to be made and printed for distribution among the natives. The Supreme Government, in a despatch to the other Governments, dated the 22nd February 1850, observe, "That the object which the Honourable Court have in view will be most effectually obtained by entrusting to the supervision of the several Local Governments all the details of the arrangements which it may be necessary to make, such general points only being fixed by instructions from the Supreme Government as may insure a certain degree of uniformity in the proceedings of the Local Governments," &c.

"The general plan of operations which has suggested itself to the President in Council is the establishment of a Central Committee at the seat of Local Government, and the appointment of as many subordinate Committees in different parts of each Presidency as may appear in the judgment of the Local Government to be called for." (Individuals of different classes of the community, natives as well as Europeans, were directed to be placed on these Committees.)

"The subordinate Committees, as well as the Central Committees, should each be furnished with a copy of the Honourable Court's despatch and its enclosures.

"The subordinate Committees should be instructed to prepare, with all practicable expedition, for transmission to the Central Committees, Reports similar to that furnished by Mr. Taylor in the district of Dacca, with lists of articles of every description which in their opinion it would be desirable to transmit to the Exhibition from the circle of country placed within the range of their Report.

The lists prepared by the different Local Committees were directed to be sent to the Central Committee of each Presidency, to be submitted to careful revision and comparison, and to be embodied into one general list, to be transmitted to the Government of India.

"The lists rendered to the Supreme Government will thus comprise all the articles which it is proposed to forward to England from the whole extent of territory situated within the limits of the four Presidencies of Bengal, Agra, Madras, and Bombay; they will also show roughly the cost of procuring the articles; and the Supreme Government will thus be able to form some definite judgment in regard to the expense which it will be necessary to incur in this undertaking."

But, on a reference from the Central Committee, the more elaborate articles of manufacture, requiring time for their preparation, were at once ordered.

The Indian Government, moreover, authorized the remission of export duty on all articles that might be sent by private individuals to the Exhibition under certificate of the General Committee, also the payment of the insurance charge on all articles thus sent; and, in the event of the goods being sold in England, would "not desire to receive from the owners either the insurance charge or the amount of export duty remitted."

The Government also concurred, "with the Calcutta Central Committee, in considering it advisable that it should be made generally known, that any premium which may be awarded to an article at the Exhibition will be given to the party from whom that article was procured by the Government." They also approved of a notification being issued to that effect.

The expanse of territory over which these operations were to be carried on and completed in the course of a few months, in order to give time for the arrival of the goods by sea round the Cape of Good Hope, extends from Singapore on the south to Lahore on the north, and from Assam on the east to Aden on the west. The

\* These observations and lists have been republished by the Author in his work on the Culture and Commerce of Cotton in India, 1851.

energy of the Governments, and the efficiency with which the several Local and General Committees have performed their respective tasks, are self-evident, from the extended series of objects displayed in the Indian compartment of the Exhibition, and which are sufficiently complete to give a good general idea of the resources of the country and of the habits of the people, as well as of their ingenuity, skill, and taste as manufacturers. The only defect is the absence of the names of many of the parties from whom the articles were purchased by the Government officers, as this may deprive some of them of the distinction of a reward to which the article may appear to be entitled.

The Central Committee at CALCUTTA was presided over by Sir Lawrence Peel, with Dr. J. M'Clelland as Secretary. The following Local Committees were established within the limits of the Bengal and Agra Provinces :—

|                                |                                                                          |
|--------------------------------|--------------------------------------------------------------------------|
| <i>Singapore</i> . . . . .     | The Hon. Lieut.-Colonel Butterworth, C.B.,<br>T. Oxley, M.D., Secretary. |
| <i>Moulmein</i> . . . . .      | Major A. Bogle.                                                          |
| <i>Arrakan</i> . . . . .       | Captain A. P. Phayre.                                                    |
| <i>Chittagong</i> . . . . .    | R. Torrens, Esq., C.S.                                                   |
| <i>Assam</i> . . . . .         | Major F. Jenkins; Captain E. A. Rowlatt.                                 |
| <i>Dacca</i> . . . . .         | R. H. Mytton, Esq., C.S.                                                 |
| <i>Moorsheadabad</i> . . . . . | T. Taylor, Esq., C.S.; Lieut. T. P. Layard.                              |
| <i>Cuttack</i> . . . . .       | F. Gouldsbury, Esq., C.S.                                                |
| <i>Chota Nagpore</i> . . . . . | J. H. Crawford, Esq., C.S.; Lieut. Jas. Emerson.                         |
| <i>Patna</i> . . . . .         | G. Gough, Esq., C.S.; E. Lushington, Esq., C.S.                          |
| <i>Benares</i> . . . . .       | E. A. Reade, Esq., C.S.                                                  |
| <i>Allahabad</i> . . . . .     | R. Temple, Esq., C.S.                                                    |
| <i>Rohilkund</i> . . . . .     | H. Pidcock, Esq., C.S.                                                   |
| <i>Agra</i> . . . . .          | W. H. Tyler, Esq., C.S.                                                  |
| <i>Delhi</i> . . . . .         | Sir T. Metcalfe, Bart., C.S.                                             |
| <i>Meerut</i> . . . . .        | C. Gubbins, Esq., C.S.                                                   |

A Committee was further established, under the Board of Administration, at Lahore, consisting of R. Montgomery, Esq., C.S., as President; Major M'Gregor and Mr. H. Cope as Members; and Lieut. Tronson, Secretary. Articles from the Punjab generally, from Lahore, Loodianah, Puttialla, Saharrunpore, Jullundur, Kangra, Cashmere, and Huzara were obtained by this Committee, and sent down the Indus to Bombay, whence they were brought, *viâ* the Red Sea and Mediterranean, to Southampton.

Communications were also sent by the Government of India to the different native Governments of Lucknow, Nepal, Gwalior, Nagpore, Hyderabad, &c., from most of whom contributions have been received, as enumerated in the following Catalogue; and to the Governor-General's Agent in Rajpootana.

In the BOMBAY Presidency a Central Committee was established, with Sir W. Yardley as President, Dr. Henry Carter as Secretary, and Dr. Gibson as Corresponding Member.

Local Committees were established in Scinde under the Commissioner, R. Pringle, Esq., with Captain Freedy as President at Kurrachee, and Sub-Committees at Hyderabad and Shikarpore.

|                                         |                                                  |
|-----------------------------------------|--------------------------------------------------|
| <i>Aden</i> . . . . .                   | Captain S. B. Haines.                            |
| <i>Ahmedabad and Kaira</i> . . . . .    | C. M. Harrison, Esq.; Assistant-Surgeon Leaward. |
| <i>Surat and Broach</i> . . . . .       | W. C. Andrews, Esq., C.S.; A. K. Forbes, Esq.    |
| <i>Tannah and Rutnagherry</i> . . . . . | J. S. Law, Esq., C.S.; Dr. Grierson.             |
| <i>Cundeish</i> . . . . .               | A. Elphinston, Esq., C.S.                        |
| <i>Ahmednuggar</i> . . . . .            | R. Spooner, Esq., C.S.; Captain Gaisford.        |
| <i>Poona</i> . . . . .                  | Col. Grant, B.E.; J. H. Pearl, Esq.              |
| <i>Belgaum</i> . . . . .                | H. W. Reeves, Esq., C.S.; Capt. Shortrede.       |
| <i>Sholapore</i> . . . . .              | J. D. Inverarity, Esq., C.S.; R. Hoskins, Esq.   |

Communications were also sent to His Highness Meer Ali Moorad, His Highness the Rao of Cutch, to Kattywar through H. Lester, Esq., to Baroda through Lieut.-Colonel Outram, and to Indore and Malwa generally through R. A. C. Hamilton, Esq., the Resident at Indore; Sattara to H. B. Frere, Esq.; Kolapore and Sawrit Warra, Major Jacob. From all which places contributions have been received.

In the MADRAS Presidency the Central Committee was presided over by W. A. Arbuthnot, Esq., with Dr. Balfour as Secretary; and Local Committees were established at the following places :—

|                                                          |                               |
|----------------------------------------------------------|-------------------------------|
| <i>Bellary, including Cuddapah and Kurnool</i> . . . . . | Brigadier-General Steel, C.B. |
| <i>Canara</i> . . . . .                                  | T. L. Blane, Esq.             |
| <i>Coimbatore</i> . . . . .                              | E. B. Thomas, Esq.            |
| <i>Ganjam and Vizagapatam</i> . . . . .                  | Walter Elliott, Esq., C.S.    |
| <i>Rajahmundry, Guntoor, and Masulipatam</i> . . . . .   | Walter Elliott, Esq., C.S.    |
| <i>Madura and Tinnivally</i> . . . . .                   | C. R. Baynes, Esq.            |
| <i>Trichinopoly and Salem</i> . . . . .                  | T. E. J. Boileau, Esq.        |
| <i>Tanjore</i> . . . . .                                 | J. F. Bishop, Esq.            |
| <i>Malabar</i> . . . . .                                 | H. V. Conolly, Esq.           |
| <i>Travancore and Cochin</i> . . . . .                   | Major-General Cullen.         |
| <i>Mysore</i> . . . . .                                  | The Commissioner of Mysore.   |

The Central Committee of Madras express themselves particularly indebted to the exertions of the Bellary Local Committee, and to those of the following gentlemen :—J. Rhodes, Esq., Colonel Tulloch, C.B., Captain R. L. Ogilvie, D. Mayew, Esq., Rev. C. F. Muzzy, and Dr. Wright.

The Bombay Government, in issuing a notification on the subject, dated 10th April, 1850, justly observed—  
“An equally favourable occasion is not likely again to offer for making Europeans acquainted with many of

the productions and manufactures of India, at present but little known. The man of science, the merchant, the manufacturer, and the artist will be prompted to visit the Exhibition of 1851, not so much by curiosity as by interest, and each and all of them will find their account in encouraging a demand for such of these productions as may prove to be valuable from their properties or likely to be brought into request by their ingenuity or the delicacy of their workmanship."

The General Committee of the Presidencies of Calcutta and Bombay, as well as the Local Committee of Singapore, prepared lists of the articles sent, arranged according to the classification issued by the Scientific Committees appointed by the Royal Commissioners in the spring of the year 1850. The Bombay and Singapore Committees have sent with their lists observations respecting several of the articles sent. The Calcutta Committee printed their list, of which several copies were received and many have been distributed; but, unluckily, a series of numbers differing from those under which the articles were sent have been employed in this Catalogue. The Madras Committee have printed the whole of the Reports received from their Local Committees, and a great mass of valuable information for future use has thus been brought together. Extracts have occasionally been made from these several documents; but the following Catalogue was prepared from the Invoices as they arrived, and according to the thirty Classes of the Head Juries.

## SECTION I.—RAW MATERIALS AND PRODUCE.

### CLASS 1.—MINERAL PRODUCTS.

[From the southern portions of India approaching so near to the Equator, while its northern provinces are nearly in the latitude of the southern parts of Europe, we may form some idea of the great extent of Indian territory, and be prepared to find great diversities of climate and consequently of the productions of every kingdom of nature, from the long-extended coasts, washed by a tropical ocean, to the tops of the several ranges of mountains, among which, as among those of the world, the Himalayas stand pre-eminent, whether we consider their extent or elevation, their diversity of climate, or of production.

As the form and slope of the country, the direction of the rivers, and the climate of the different parts, depend in a great measure on the direction and elevation of the mountain ranges, as well as the soil on their mineralogical composition, it is obvious that before proceeding to their mineral contents or to other subjects, we should first obtain a general idea of the number and position of the several mountain ranges of India, and this may be conveniently done by taking them, as they naturally form separate ranges:—first the Western and secondly the Eastern Ghauts, which run parallel to the Malabar and Coromandel coasts; thirdly, the Vindhya or Central zone of India, extending all across the continent of India, from Monghir and Rajmahl, on the Ganges, to the hilly tracts of Guzerat, on the West; fourthly the Himalayas, which form the great north-eastern boundary of India.—ROYLE. *Introduction to Himalayan Botany.*

Few minerals or ores of metals have been sent from the Himalayan mountains, though these abound in iron, copper, and lead. The mines have only been worked superficially, but it is doubtful whether they would repay any great outlay. Graphite has been found in Kemaon, and traces of lignite in the tertiary formation, where the immense deposit of fossil bones have been discovered.

From the extreme eastern and western points of the Central zone, that is, from the Saone and Kane rivers on one side, and from Cambay on the other, a great variety of agates and cornelians have been sent. From the different States which intervene between the ramifications of this range and the great desert on the north-west of India, we have ores of metals and specimens of marbles, with works in stone and marble. Mines of copper and of lead occur in these regions, and iron is abundant. The only large collection of minerals which has been received is from the Madras Presidency, in which the variety of kaolins are

particularly interesting. These are likely to be useful in the arts, and some of the earths as colours.

The deposits of coal stretch across India from east to west, that is, from Assam into Silhet and Burdwan, and along the course of the Nerbudda, as well as in the western district of Cutch.

From the Tennasserim coast, as well as from Borneo, oxide of tin has been sent, as well as sulphuret of antimony from the latter, where both are very abundant.]

#### 1. Metals and their Ores.

INDIAN IRON AND STEEL COMPANY, *Beypore, near Calicut, Malabar, and at Porto Novo, near Cuddalore, Carnatic.* Office in London, 10A King's Arms Yard, Moorgate Street—Producers, Manufacturers, and Importers.

Specimens of the ores and charcoal used, viz. :—

Magnetic oxide, from Salem and South Arcot.

Crystals of the magnetic ore.

Ore as prepared for the blast furnace.

Argillaceous iron-stone, from South Arcot.

Charcoal used in the manufacture.

Specimens of the pig iron from the blast furnace.

The pig iron refined.

Specimens of annealed castings made from the pig, viz. :

Chain 5-16ths, cast entire in links.

Flier used in worsted spinning, hitherto made only of wrought iron.

Springs cast, as the above, from the pig iron, and drawn down. Onions' patent.

Specimens of the wrought iron :—

Bars fractured to show the fibre and colour.

Specimens worked and twisted cold, to show tenacity and flexibility.

The iron drawn into wire, Nos. 7, 18, 22, 25, 30, to show ductility and tenacity.

Specimens in screws, horse nails, rollers, axles, gun-barrels, &c.

The bar iron for steel purposes :—

Bar steel.

Cast steel ingot, showing its colour and crystallization.

Cast-steel drawn to sizes, and fractured to show colour and temper.

Specimens of files, saws, chisels, gonges, and plane-irons.

Table knives and carvers.

Razors, scissors, and knives, fine cutlery.

Sword blades.

[From these magnetic ores of iron the "Wootz," or Indian steel, is made by the natives; also malleable iron by the direct process. The ore when cleaned from the quartz with which it is found combined, is shown by analysis to contain 72 per cent. of iron with 28 of oxygen, and traces of manganese and lime without any other

admixture. The manufacture of iron in India from these ores by European methods was established by this Company some years ago, and their produce has been imported to a considerable extent into this country, but chiefly in the shape of pig iron hitherto. Charcoal is exclusively used as fuel in the manufacture.]

Specimens of chrome ore from the Company's mines in the Salem districts.

Samples of the chromate and bichromate of potash manufactured from this ore.

Dr. Andrew Ure found this ore to be 30 per cent. richer in colouring matter than the best Baltimore ore.

Iron ore; cutties, or blooms of iron; palms, or bars of iron; vuttoms, or pieces of cast steel, as it came from the clay crucible; ollies, or bars, drawn out from clay crucibles; small bag of iron beads which ooze out from the blooms in the blast furnaces; steel made from the blooms in the same kind of blast furnace, and used in making edged tools—from Salem.—F. G. Fischer.

R. A. C. HAMILTON, Esq., Indore.

1 Specimens of iron ore, iron, and the wood which is used in smelting it, from Indore.

The following is Mr. Hamilton's account of the process, with a section of the furnace.

"The furnace (A) in which the ironstone is melted is excavated out of the ground, about 12 by 10 feet, and 10 feet deep; the furnace is made of clay, plastered with cow-dung (heaped). Double (B) bellows are fitted, airtight at the bottom, worked by a man sitting between them. At the bottom of the furnace is an earthen sieve (C) through which the dirt and refuse drop. The holes are filled with earth at first, but this gives way as the iron melts and comes down; when choked the holes are opened by an iron poker (D), the drops and dirt fall to (E). The fire is formed of caked cow-dung (F) broken small, charcoal (G) and unjien (I) kheir (J) wood. The wood is put on the top part, a layer (H), ironstone broken the size of marbles is placed about one inch in thickness, then a layer of cow-dung (I) and charcoal, and so up to the surface, when the ironstone is piled about 18 inches, and covered in with the wood cut into small billets. After four hours' incessant plying of the bellows, the furnace has attained a heat which makes the first layer of stone melt and the dross fall through; the whole mass has become gradually heated, and as it falls, the stone on the top which is regularly served keeps falling into the furnace. In this way the furnace is plied and filled for 12 hours, the bellows going the whole time; the furnace is now left to cool, and according to the season, is ready to open in from 12 to 24 hours."

The iron will amount to about 40 lbs. weight, 20 seers, which at the pit, including digging the stone, fire-wood, and every charge, sells so that the profit averages one rupee per seer: the people consequently work only as their wants require, and not regularly.

Nothing more is done by this class of workmen: the iron is sold as it comes out of the furnace, and worked up by another class.

Iron ore and iron, from Cutch.—Rao of Cutch. Manufacture of iron in Cutch:—"In extracting the metal in Cutch, layers of very small pieces are disposed alternately with others of charcoal, in a rude open furnace, and exposed to the blast of two small bellows made of sheepskins. The metal when fused, falls into a hole at the bottom of the furnace, when it is transferred to an enclosed furnace, and subjected to similar blasts until brought to a white heat, when it is taken out and beaten into a bar. No flux of any kind is used."—*Captain Grant's Geology of Cutch*, page 293.

Details of the expenses of manufacturing 140 lbs. of iron:—

|                                     |          |
|-------------------------------------|----------|
|                                     | Corries. |
| One cart-load of material . . . . . | 2        |
| Mixer . . . . .                     | 1        |

|                                                           |          |
|-----------------------------------------------------------|----------|
|                                                           | Corries. |
| Master . . . . .                                          | 1½       |
| Manager of charcoal . . . . .                             | ½        |
| Director of second furnace . . . . .                      | 1½       |
| Three hammer-men . . . . .                                | 2½       |
| Two bellows-men at ¼ each . . . . .                       | 1        |
| Four bellows-men of ½ each . . . . .                      | 3        |
| A breaker of the material for each cart-load . . . . .    | ½        |
| Cart of charcoal . . . . .                                | 8        |
| Second smelting charcoal . . . . .                        | 3        |
| Tax for five maunds or 140th, (a day's produce) . . . . . | 5        |
| Sundries for beggars, hire of bellows, &c. . . . .        | 2½       |
| Tobacco for men . . . . .                                 | ½        |

Total 32 or 16s.

"This is the cost of one day's produce, or five maunds, at 40 seers a maund, one seer-weight, 40 piece-weight.

"A cart-load of mineral, after 18 hours' smelting in the open furnace, yields 10 maunds (280 lbs.) of pig iron, and that again yields 5 maunds (140 lbs.) after 9 hours' smelting in the closed furnace."

- Ironstone, Soane River.
- Iron ore bisulphuret embedded in stone, from Cuddapah.
- Iron ores, magnetic, from Vizagapatam.
- Iron ore and two pieces iron, from Mugraonce Mine, Gwalior.—Maha Rajah Rao Scindiah.
- Iron ore and two pieces iron, Dhooab Mine.
- Iron, smelted, and iron ores; ferruginous concretions, from Teroo, in Assam.—Capt. Brodie.
- Iron ore and smelted iron, from Shahabad.—Rajah of Kotah.
- Iron ores, from Talagaon.
- Iron ore and unwrought iron, from Hazareebagh.
- Iron, from Chota Nagpore.
- Iron ore, from Cossya Hills. Iron sand, from Assam.
- Bag of iron ore and iron, from Nepal.
- Iron, from Banglee Mines, Bombay.
- Iron ore, from Ulwar.—Rajah of Ulwar.
- Iron ore, from newly-discovered mines in Beerbhoom.
- Iron and steel in different stages, from Salem, &c.
- Flat iron specimens; half-roasted iron; lump, crude, and raw iron; and iron smelted, from Cossya Hills.
- Iron ore, from the Tennasserim provinces. There is a large variety of iron ore in these provinces, some of which is very rich in metal, especially in the Tavoy District. Near the river-side, about three miles from the town of Tavoy, is a hill which, according to the local authorities, appears to consist almost wholly of magnetic oxide of iron. Common iron pyrites is also very abundant in the provinces.
- Manganese, from the Mergui District, in the Tennasserim provinces, where large quantities exist. It is not made use of by natives.
- Antimony sulphuret, from Tennasserim and Madras.
- Smelted antimony, from Borneo.
- Pyrites, from Cuddapah.
- Copper ore from Ulwar and Beerbhoom.
- Copper ore, from Bellary.
- Copper ore, from Dhumuara.
- Copper ore, from Tennasserim and Nepal.
- Lead of superior quality, from Sookpoor.
- Lead ores and lead, from Tennasserim and Nepal.
- Lead ores, from Bhoondie and Beerbhoom.
- Lead ore, supposed, from Singapore.
- Tin ore, from Tennasserim and Malacca.
- Tin, from Malay Peninsula, &c.
- Tin, oxide of, from near Mergui in the province of Tennasserim.
- Chromate of iron, from Salem.
- Cinnabar, and in its original state. This is said to be superior, as obtained from Surat, to the China vermilion, but none has been supplied. Orpiment, from Nepal.
- Gold dust, from Singapore and Nepal.
- Gold-washers' sand, from Assam.—Major Hannay.
- Silver box of gold-dust, villages of Kajoo and Nclam.



boor— from Ernaad Talook, Calicut, and Wynaad, Malabar.

Bell metal, from Bellary and from Rajah of Kota.  
Pewter, from Nepal.

#### 2. Non-Metallic Mineral Products.

Moss agates, from Nerbudda, Soane, and Kane Rivers.  
Species of agate, from Soane River, Kane, and Nerbudda.

Calcedony, from Soane River.

White agate, from Saugur.

Pebbles, from Soane River.

Agates, from Ahmedabad.

Bloodstones, from Kane River, &c.

Chitta hindnee, piebald or spotted, from Jubbulpore.

Grass stone, from Betoal River.

—? Bincole in Saugur.

Lapis lazuli, locality unknown.

—? Kane River.

Carnelian, from Kumack.

—? from Soane River.

—? sort of gold stone, locality not known.

Carnelians and onyx, from Ahmedabad.

Jasper and marble, from Bengal.

Strings of Nimluck beads; plain and diamond-cut carnelian; greenstone and mother-of-pearl beads; mother-of-pearl buckle; black stone earring drops; large and small pieces of crystal; carnelians for brooches; stones for clasps; bloodstones; gowries; large and small amethysts; large and small emeralds; rajawahs; assorted stones; ferozahs; sapphires; cat's-eyes; garnets; romarooks; salamin-stone; blue-stone; turquoises. Purchased from native lapidaries of Calcutta.

Agates, &c. from Cambay. The following account has been drawn up by Mr. Augustus Summers, senior apothecary, Cambay:—

*Articles wrought by the Cambay Lapidaries.*—(For sale to the gentry passing through Cambay, and sent to Bombay for the English, Calcutta, and other markets.)

The whole of the agates, bloodstones, and carnelians are made use of, and worked into models of cannon with carriage and appurtenances complete; slabs for boxes; sets of variety of slabs, twenty in number, to form a square table; cups and saucers; chessmen; flower-vases; pen rack, card and letter rack; watch-stands; inkstands; knife-handles; rulers, paper-cutters, paper-weights, pen-holders; sets of necklaces; bracelets and brooches of variety of patterns; crooked needles; silk-winders; marbles; braces and shirt-studs; seals; also rough specimens of stone having one side polished.

#### *Articles prepared for the China Market.*

Articles wrought for China comprise only two kinds, and are made up entirely of carnelian—first, the oval and square flat stones resembling watch-seals, large and small, named monaligool, worn as armlets and dress ornaments; the other variety is the beads named here dholl, each necklace containing fifty beads, these are all plain, polished, and round. Vast quantities of the above are annually exported from this in chests to Bombay, for China; the extent of valuation is from 50,000 to 60,000 rupees annually.

#### *Articles for the Mecca, Djedda, and Mecca Markets.*

The descriptions of stone employed are the veined agate from Rhanpore, carnelians from Ruttonpore, the cat's-eye, and the jet or obsidian; these are worked into large quantities of rings, both plain and ornamented; ring-stones, wristlets, armlets, and necklaces, embracing the following variety:—

Necklaces—Per hoodar dholl, cut beads; goocradar dholl, diamond cut beads; badami arr, almond-shaped necklace; khautee, oblong flat necklace; chawneelee, spear-shaped; madalyah, jawitch or jahwiz, composed of three stones; soobah khaata, plain round beads, used as a necklace and rosary.

Armlets and wristlets.—Moota madalyah, composed of two stones, worn as a wristlet; pytah, a wristlet composed of seven round flat stones; pouchea, a wristlet composed of several flat stones; byjootah, an armlet of one stone cut in different fanciful devices; tam ghool, single stones in shape of large flat seals.

Rings.—Rings are made of carnelians, of various devices, named imgotee, and riny; stones for setting, called meggeenia, are made of carnelian and the cat's-eye.

The articles for the Djedda and Mocha markets are packed up in chests, also in bales, with the cloths, and exported to Bombay and Veraval Bunder, near Dica, whence they are transhipped to their destination, and from thence they find their way into Arabia, Persia, Scindh, and Afghanistan, the merchants realising large profits by the sales effected.

#### *Mode of Manipulation, or Process by which the different Articles are Wrought.*

Beads.—The following is the process of making beads:—the stones are first broken into pieces of the size desired; an iron spoke, named Khoredia, is driven in the ground in an inclined direction with one point upwards; the stones are placed on this point, and chipped with a hammer made of iron till rounded; it is then passed on to the polisher, who fixes a number of equal size in a pair of wooden or bamboo clams, and rubs them on a coarse and hard polishing-stone called Dholin. They are then transferred to another man, who, securing them in wooden clams, rubs them against a ground polishing-board, named pattymar, on which is smeared a composition of emery and lac, turning the beads round so that every part of the surface may assume a globular form and become polished. The final polish is given by the beads so prepared being put from one to several thousands into a stout leather bag about 2 feet in length, and from 10 to 12 inches in diameter, with some emery dust and a very fine powder named warry, which is the sediment of the carnelians deposited in the earthen dish, partially filled with water, during the process of drilling holes in the beads, which is always collected and dried. The mouth of the bag is tied up, and a flat leather thong or tape is passed round its centre, and the bag is rolled towards each other by two men, seated at opposite ends of a room, from ten to fifteen days: the leather bag is kept moistened with water. When the beads have taken a bright polish, they are passed on to the people who bore the holes, which is effected by means of a steel drill tipped with a small diamond, during which process the spot is fed with water, drop by drop, passed through a thin narrow reed or metallic tube.

The cut beads are passed from the rough polishing-stone to the lapidary polishing and cutting-plate, and lastly the holes are drilled.

Knife handles.—These undergo exactly the same process as the cut beads, adapting the shape to any pattern.

Cups and saucers, and any other hollow articles, are wrought according to the required external shape on the steel spike, and a rough polish given on the rough polishing stones: the cavity is formed by the diamond-tipped drill to the depth of one-fourth of an inch all over the space until it exhibits an honey-combed surface—the prominent places round the holes are then chipped away; and this process is repeated until the depth and form desired is obtained, they are then polished upon prepared moulds of convex formation, and of the same composition as the polishing plates which are attached to the turning-wheel.

Cannon.—The bore of the cannon is effected by a drill with two diamonds to the depth required, afterwards five others in succession, of proportionate increase in the axes, are substituted, each having an increase in number of diamonds placed circlewise, the last encircling as many as twelve diamonds.

Slabs. Paper-cutters.—Paper-weights, &c., are cut by means of a toothless saw made of iron, fixed to a light wooden frame, and the cut is fed with emery dust and

water. When the stone is small the saw is worked by one man, when large by two men. The stone to be operated upon is attached to a large wooden frame which is itself a fixture partly in the ground. The cement consists of a coarse description of beeswax with the fine fibres of new cloth, by means of which the stones are firmly attached to the wooden framework. Several men in a row are at the same time employed cutting through different pieces of stone.

*Preparation of Polishing Plates or Dishes.*

The plates or dishes are made of emery (named korunge and samadah), a species of corundum of greyish-black colour, glistening lustre, and granular concretion. Its fine powder is obtained by trituration and levigation: this, mixed with the seed-lac, forms the circular polishing plates, two in number. The first, or coarse-grained, is made in the proportion of three parts of ground emery to one of lac; the second, or finer, is made of two and a half pounds of finely-levigated emery to one seer of lac; a third, or finest polishing dish, is composed of warry and lac in equal proportion. Warry is the sedimentary deposit of cornelian in an earthen dish during the polishing

process. A copper dish is occasionally used for very hard stone, such as the Ceylon and other precious stones, and a wooden dish, made of deal or other fine-grained wood, is employed for polishing the softer description of stone.

The following description of the lapidary wheel is copied from the "Bombay Times:"—

"Native Lapidary Wheel.—The wheel consists of a strong wooden platform, 16 inches by 6, and 3 inches thick. In this are two strong wooden uprights; between these is a wooden roller, 8 inches long and 3 in diameter, fastened into a head at the one end: this works on an iron spindle or axle at each end. On the one end the axle is screwed and fitted with a nut, by which the cutting or grinding wheel can be made fast. The lap-wheels consist of two circular discs or cakes of lac with ground korund, coarse or fine according to the work; of a copper disc for polishing the very hard, and a wooden one for finishing the work of the softer, description of stone. These are spun backwards and forwards by a bow, the string of which passes round the roller. The lapidary sits on his hams, steadying the wheel with his foot, and holding on the stone with his left hand while he works the bow with his right."

LIST of various AGATES, CORNELIANS, &c., wrought upon by the Lapidaries at CAMBAY.—14th June 1850.

| Description of Stone.                                                                                                                                                                                                                                                                                                                                                                            | Where Procured.                                                                                                                                       | Quarried or how Procured; Size and Formation.                                                                                                                               | REMARKS.                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Jasper, Heliotrope, or Bloodstone.</i> —A beautifully-variegated stone of greenish basis. The green with flamed streaks, or red spotted delineations, is named by the lapidary Zuela Chantadur; those more variegated with green, red, and yellow tints, is named Putolia. It occurs in massive layers, is hard, with a dull fracture, and takes a high polish.                               | Near the village of Tunkaria, in the territory of the Moorvi Rajah, about 12 miles north of Rajcote.                                                  | Found on the hills named Bungaud, below the hill under the strata of soil, in massive layers from $\frac{1}{2}$ lb. to 40 lbs. in weight.                                   | For permission to collect the stone, 8 annas per maund (40 lbs.) is paid to the Rajah, and 2 annas per each bullock-load for passing through his territory, and $4\frac{1}{2}$ rupees bullock-hire to Cambay. A bullock-load contains 3 maunds, on which a town duty of 8 annas is levied at Cambay.                     |
| <i>Mossagate.</i> —Named by the lapidary Sowa Baju. This is a beautiful species of agate, of a very clear or clouded crystalline basis, with impressions of the dark-green moss, or green and reddish-brown moss delineations. Found in massive layers, often cracked in various ways. It is hard, and receives a fine polish.                                                                   | Near the village of Tunkaria, in the territory of the Moorvi Rajah, and at Bood Koten, about 3 miles from Tunkaria.                                   | It occurs in the plain about 2 feet under the surface of soil, in massive layers, cracked, and weighing from $\frac{1}{2}$ lb. to 30 or 40 lbs.                             | Ditto ditto.                                                                                                                                                                                                                                                                                                             |
| <i>Agate, Common.</i> —A mineral whose basis is calcedony, blended with quartz and cornelian. The white or semi-transparent is named Dholu, and cloudy and streaked Jamma. It is generally greyish-white, of different shades. It is pretty hard, brittle, and massive, and receives a high polish.                                                                                              | Near the village of Mahidpore, 3 miles from Tunkaria, in the territory of the Rajah of Moorvi.                                                        | It occurs in the plain, near the surface of soil, in massive blocks, the most perfect not exceeding 5 lbs.; the inferior quality and cracked, as high as 60 lbs. in weight. | Ditto ditto.                                                                                                                                                                                                                                                                                                             |
| <i>Agate, Kapperwauge.</i> —This is a beautiful species of agate, some having the impression of mineralized plants delicately preserved with a clear semi-transparent basis, and is named Barriah: others of variegated shades of colour, with landscape or other delineations, named Aggeah, Rattea, &c. It occurs in pebbles, or rolled masses, is hard, and receives a high degree of polish. | At Kapperwauge, in the Kairazilla, and in the bed of the river Magain, between the village of Amliala, and Namedwah, about 15 miles from Kapperwauge. | It occurs on the banks and in the beds of rivers, in rolled balls of spheroidal reniform, and amygdaloidal figures, from $\frac{1}{2}$ lb. to 10 lbs. in weight.            | The Bheels search for the stones and sell them to a Borah at Mandwah, from whom the lapidaries purchase at from 3 to 12 rupees per maund, according to quality. It is carted or brought on donkeys to Cambay. Ten maunds of the stone is valued at 100 rupees, on which a duty of $4\frac{1}{2}$ rupees is charged here. |
| <i>Agate, Veined.</i> —Named by the lapidary Dorador, of different shades of white with dark streaks, or a dark ground with white thready streaks, assuming different forms. It occurs imbedded in clayey soil, is hard, and takes a very high polish.                                                                                                                                           | At Khanpore and adjacent villages, named Darpeepla and Ninama, in the Ahmedabad zilla, near Dandookee.                                                | Found imbedded under the upper strata of soil, in pebbles of various shapes, not exceeding $\frac{1}{2}$ lb. in weight.                                                     | A fee of 2 rupees per cart-load is paid to the Government on the entries, and the stones are carted to Cambay. The cart-load is 40 maunds, which pays a town duty of 2 rupees here.                                                                                                                                      |
| <i>Cornelate-stone.</i> —Assuming its colour, as the name implies; is named Katiah, of a brownish-earthly basis, not very hard, of a dull fracture, and does not take a high polish.                                                                                                                                                                                                             | At Khanpore, near Dandookee, and at Temkaria, in the territory of the Moorvi Rajah.                                                                   | It occurs on the surface, and imbedded a few feet under the soil, in masses from 1 to 8 lbs. in weight.                                                                     | Brought from Tunkaria on bullocks at rate of $4\frac{1}{2}$ rupees per load, and in carts from Khanpore, 15 rupees hire for cart-load, besides the Government fee of 2 rupees per cart-load.                                                                                                                             |

| Description of stone.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Where Procured.                                                                                                                                                                                                                                                                                                    | Quarried or how Procured ;<br>Size and Formation.                                                                                                                                                                                                | REMARKS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Crystal</i> .—Named Phuttmesat: clear transparent stone, resembling glass in appearance, and receives a high polish.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | At Tunkaria, in the territory of the Rajah of Moorvi.                                                                                                                                                                                                                                                              | Occurs in masses under the surface of soil, from 1 to 20 lbs. in weight.                                                                                                                                                                         | Pays the same duty as the other stones in the Rajah of Moorvi's territory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>Variogated Stone</i> .—Named by the lapidary Mimarian: of a liver-brown earthy basis, with yellowish impressions of shells and annelida (?), having a pretty marble appearance, but does not receive a good polish.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | At Dhokeewarra, in the Runn, about 60 miles north of Deesa.                                                                                                                                                                                                                                                        | Found in large masses on the hill, and dug up in large blocks at its base.                                                                                                                                                                       | Carted to Cambay.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Lapis Lazuli</i> , or the Azure Stone. —Named here Rajahwarrad: of a deep blue colour and soft earthy basis, with sprinkling of silver or gold in spots. May be known by its beautiful indigo blue colour. It is soft, and does not receive a high polish.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Imported here from Bombay. Brought from Persia and Bucharra.                                                                                                                                                                                                                                                       | Said to be found in rounded balls in the bed of rivers.                                                                                                                                                                                          | .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Jet Stone</i> (Obsidian).—Named here Kulla: further resembling glass in fracture, not very heavy, and takes a high polish.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Imported here from Bombay.                                                                                                                                                                                                                                                                                         | It occurs on the hills at Bassorah and at Aden, in large blocks.                                                                                                                                                                                 | .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Blue Stone</i> (Perosa).—Assuming various shades of blue. This is a composition resembling glass, soft, and takes a good polish. It resembles the true perosa (turquoise) when highly polished.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Imported here from Bombay. Is said to be prepared in China.                                                                                                                                                                                                                                                        | Brought from China in flat pieces, not exceeding $\frac{1}{2}$ lb. in weight.                                                                                                                                                                    | .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Cornelian</i> is named Gharr in the original state. They are cloudy, of various shades of brown, and others of different tints of yellow in the natural state. After exposure to the sun and baking, these assume other tints, as follows: light brown becomes white, dholu, pale yellow, rose colour, gulabi, deep yellow. Red or lall, a mixture of cloudy brown and yellow, becomes white and red, named Ubluckee: another shade of yellow turns pinkish-purple, named Nafurmani; and brown becomes a darker shade, named Emni. The above are quarried in large quantities, and undergo the process of baking; they receive a high polish, and are wrought into flat and round necklaces, bracelets, armlets, stones for seals, chessmen, marbles, studs, rings, &c. The other stones found in the neighbourhood or on the hills, and subjected to the heating process, are as follows:— | At the base of the hills of Bowa Abbas and Rajpeeplee, in the territory of the Naudode Rajah, who is tributary to his Highness the Gaickwar. The Naudode Rajah farms the quarries to native contractors, who pay annually from 2,000 to 2,500 rupees to the Rajah for the sole privilege of collecting the stones. | Quarried or dug up from near the base of the hill in various shapes: the pebbles are imbedded in a soft yellow soil, or in bluish-grey clay, of size varying from a small pebble to 1 lb. in weight, and are chiefly of uneven form and surface. | Between the Bowa Gore and Bowa Abbas hills on the plain are small mounds, from whence the stones are quarried by the Bheels of the district; they excavate to some depth, forming galleries in a horizontal direction about five feet in height and four broad; they are obliged to use a lamp, and work in pairs, one employed with the pickaxe in the quarry, the other at the entrance, who examines the stones by chipping off a piece, retaining the good and rejecting the bad on the spot: when a larger number of men are employed, the galleries are extended in different directions, with air passages. The two men, in 8 or 10 hours, obtain from 10 to 40 lbs., which is brought in the village of Ruttonpore, by the contractor or his people. A quantity is thus procured in the fields; after which many generally dig a trench round a field two feet in depth and three in breadth. In this fires of goats' and cow dung are set up, and the stones in earthen pots, in single rows, are placed in the trench; the fire is kept up from sunset to |
| <i>Mora</i> , or <i>Bowa Goree</i> .—A species of onyx, or dark-coloured cornelian with white veins, or a greyish-white ground with dark veins, assuming various figures, receives a high degree of polish, and is much prized in the Djeddee market. The true onyx, or sala main, is brought here by Mahomedan mendicants, in ready-made strings of beads.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | On the Bowa Gore and Abbas hills, or at their base, or in the bed of the river formed by the monsoon streams between the hills.                                                                                                                                                                                    | Mora is found on or at the base of the hills, in pebbles not exceeding 1 lb. in weight.                                                                                                                                                          | sunrise, when the chatties are removed and the stones piled away. The contractor attends to the heating process; the stones are once a-year carted to Nemedra, and conveyed in canoes down the river to Brouch, whence they are brought in boats to Cambay. Each bag of 25 maunds pays a duty of 1½ rupees to the British Government at Brouch, in addition to the import and export duty at Cambay. The stones are sold to heads of the lapidary manufactories. The town import duty is 1½ rupees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <i>Cat's-eye</i> , <i>Chesumdar</i> .—The principal colour is grey, presenting many varieties usually translucent. It is hard, bears the impression of a cat's or bird's eye more or less perfect, is much esteemed, and receives a high degree of polish.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Found on the Bowa Gore and B. Abbas hills, or at their base, or in the bed of the river formed by the rains between the hills, which is dry in the month of October.                                                                                                                                               | It occurs in blunt-edged or rolled pieces; the pebbles are of various shapes and small size, not exceeding 2 oz. in weight.                                                                                                                      | The pebbles are searched for by the Bheels of the district, and disposed of to the contractor at Ruttonpore, who sells them to the head of the different lapidary manufactories at Cambay.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>Roree</i> , or <i>Lussenia</i> .—A yellow pebble, semi-transparent, found scantily with the cat's-eye; receives a very fine polish, and is much esteemed: usually cut for ring-stones.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Ditto ditto.                                                                                                                                                                                                                                                                                                       | Ditto ditto.                                                                                                                                                                                                                                     | Ditto ditto.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| DESCRIPTION OF ARTICLES.                                                                        | Amount, Rupees. |         |
|-------------------------------------------------------------------------------------------------|-----------------|---------|
|                                                                                                 | From            | To      |
| A cannon, with carriage, and timber carriage and appurtenance complete . . . . .                | each            | 200 250 |
| A cannon, with carriage, of moss or other agates, or bloodstone . . . . .                       | "               | 70 100  |
| A set of chess-men, of any two varieties of stone . . . . .                                     | per set         | 75 100  |
| A set of variegated slabs, twenty pieces to form a small square table . . . . .                 | "               | 35 45   |
| An oval slab and pedestal, forming a miniature table . . . . .                                  | each            | 25 35   |
| A large cup and saucer, of agate or bloodstone . . . . .                                        | "               | 40 50   |
| A cup and saucer of small size, ditto . . . . .                                                 | "               | 10 20   |
| Slabs large, six pieces of different, or one description of stone, to form into a box . . . . . | each set        | 35 50   |
| Slabs, a pair, to form the top and bottom of a box, large . . . . .                             | per pair        | 8 15    |
| Slabs, a pair, to form the top and bottom, of smaller size, for snuff or other box . . . . .    | "               | 3 6     |
| A pen-rack, with ink-stand and pen-holder . . . . .                                             | per set         | 20 25   |
| A watch-stand . . . . .                                                                         | each            | 8 10    |
| A letter or card-rack . . . . .                                                                 | "               | 10 12   |
| A flower-stand or vase . . . . .                                                                | "               | 20 30   |
| Knife-handles, of good description . . . . .                                                    | per dozen       | 12 18   |
| Butter-knife-handles, of agate or bloodstone . . . . .                                          | per pair        | 3 4     |
| Rulers, of agates, bloodstone, &c. . . . .                                                      | each            | 3 5     |
| Paper-cutters, ditto, of sizes . . . . .                                                        | "               | 1 3     |
| Paper-weights, of different sizes and patterns . . . . .                                        | "               | 3 6     |
| Rough specimens of stones, one side polished . . . . .                                          | per dozen       | 3 4     |
| Stones for brooches, of different patterns . . . . .                                            | each            | 1 4     |
| Bracelets, of variety of patterns . . . . .                                                     | per pair        | 4 8     |
| Necklaces, of ditto, ditto . . . . .                                                            | each set        | 4 10    |
| Crochet needles, pen-holders, and seals . . . . .                                               | per pair        | 1 3     |
| Braces, studs, and coat-button studs . . . . .                                                  | per dozen       | 3 4     |
| Shirt studs . . . . .                                                                           | "               | 1 1     |
| Marbles, of different sizes . . . . .                                                           | "               | 1 2     |
| Cornelians, stamps for engraving initials or crests . . . . .                                   | per pair        | 3 6     |
| Ear-drops, with tops to match . . . . .                                                         | "               | 1 3     |

TABLE prepared from the CAMBAY CUSTOM-HOUSE RETURNS, exhibiting the Value of the Traffic in Wrought Cambay Stones, and Export Duty thereon, for two official years, 1848-49 and 1849-50, commencing in May and ending in April.

|         | Small Packages. |        | Bamboo Basket. | Large Box. | Bags of Cornelian sent in large Bales of Cloth. |       | Total Value of Cornelian sent each Year. |    |    | Customs' Duty on the part of the British Government. |    |    |
|---------|-----------------|--------|----------------|------------|-------------------------------------------------|-------|------------------------------------------|----|----|------------------------------------------------------|----|----|
|         | Bundry.         | Kersa. |                |            | Bales.                                          | Bags. | Rs.                                      | A. | P. | Rs.                                                  | A. | P. |
| 1848-49 | 10              | 3      | Kimdin. 13     | Patie. 23  | 49                                              | 312   | 108,422                                  | 0  | 0  | 1,350                                                | 4  | 0  |
| 1849-50 | 18              | 1      | 11             | 6          | 98                                              | 536   | 94,902                                   | 0  | 0  | 1,186                                                | 4  | 6  |

In the above table, the export duty levied by the Nawab is not given: the amount exactly trebles that of the British Government, which is calculated at one rupee and four annas per cent. on valuation; this is independent of private fees levied by the Nawab's native officials.

The agate and cornelian trade forms a subject of much interest, but its "modus operandi" has hitherto excited little attention: no desire has been manifested to acquire a knowledge of its varied and complex process, from first procuring the stones in the rough state, to the ultimate perfection of finish arrived at by the art of the lapidary at Cambay. This I have now attempted to describe in detail; and from the foregoing statement of the different agates and cornelians, it will be evident that though they still bear the name of Cambay stones, and this place has held the reputation for a considerable time of being famed for its stone quarries, they are actually brought here in the rough state from different parts of Guzerat, and are only wrought in the lapidary workshops established here for upwards of a century; and although the value of the traffic has been considerably reduced of late years it still forms, next to cloth, the principal article of commerce, yielding a good profit to the traders, forming a valuable source of revenue to the State, and giving employment to nearly two thousand people engaged in the manipulation of the articles in the busy workshops, amounting in all to about seventy-five large and twenty-five small shops.

The traders consist of about fourteen Bannyans and Borah merchants, who purchase the wrought articles from the heads of the lapidary workmen, and send them to Bombay, Djedda, and other ports.

The workmen or artificers form a distinct corporate body called the ukkeekia jamut, or punchayat, and are designated as follows:—100 ukkeekias, master artificers, or heads of establishment; 300 gusseas or workers on the lapidary wheels; 200 dhoolias or polishers on the rough and hard polishing-stone; 50 puttymars or polishers on the wooden frame; 100 badars or borers, those employed on the drilling process—750 in number. These form the punchayat, or regularly constituted trades' craft. Besides which, upwards of a thousand people are employed in the different shops as day-labourers in the chipping process, cutting slabs, &c.; they consist of men and boys of both Hindoo and Mahomedan faith.

The punchayat holds the power of adding to their community—the party so privileged, paying a fee of a hundred rupees for his admission into the craft, which is spent in dinners. Each department of labour remains distinct; the artizan in one branch will not interfere with or undertake the work of another branch, and each enjoys distinct privileges appertaining to his particular department needless to notice here.

Coal, from Hooz Mine, Arracan, and from Mergui.  
Coal, and accompanying rocks, from Singrowlee.—Worked by the Messrs. Hamilton and Co. of Mirzapore.  
Coal, from Kurhurbalee.  
Coal and coke, from Assam.  
Coal, from Indurgerba and Badum, and from Cossya Hill.  
Coal, or lignite, from the Trombow River, in Cutch.  
Coal, from Nepal and Burdwan coal mines.  
Petroleum, from Silhet, Assam, Arracan, Akyab, and Cheduba.

Doopashapomic resin in earth; heerakussee, variety of amber; from Murr.

Mineral resin (amber), from Cutch. This is dug up with the coal at the Trombow River.

Sandstone, from Gwalior.

Sulphur and saltpetre, from Nepal.

Sulphate of iron.

Carbonate of Soda, from Cuddapah and Bellary.

Carbonate of soda, nearly pure, prepared from Dhoby's (Washerman's) earth.—Professor Key.

Salt, from Tanjore and Vizagapatam.

Saltpetre of Maganore and Errode. Potash, nitrate of, or saltpetre, from Coimbatore and Bengal.

Pearlash, from Madras; pearlash prepared from nitre and charcoal, two sorts, and from Lahore.

Magnesia, carbonate of, from Bellary, Salem, and Oopalon.

Salt, from Nepal.

Salt from Nowpadah pans—from Vizagapatam.

Salt produced by periodical inundation of sea over a sandy plain, collected into heaps after evaporation—from Coombaconum.

Bootan rock salt.

Alum, and earth from which it is extracted, from Cutch. This earth is chiefly found near the town of Murr. About one-sixth of the alum manufactured is used for home consumption, and the remainder is exported to Marwar, Bombay, &c.

Mode of manufacturing alum in Cutch:—"The shale from which alum is obtained forms beds in the variegated marl, and in a kind of blue clay. Long galleries are cut for the purpose of extracting it; but so plentiful is the supply, that no means are taken to support them, and they generally fall in during the rainy season. The manner in which the alum is prepared is very simple: the earth is exposed in heaps to the sun and air for about five months, during which it burns spontaneously. It is next laid out in little beds, similar to those of a field prepared for irrigation, and it is watered by a small stream for ten or fifteen days, by which time the aluminous matter accumulates into semi-crystalline plates. This substance is boiled in water for about seven hours, after which, a third or one-half, by weight, of potash is added, and it is again boiled for a few hours, according to the strength of the ley. It is then poured into a large open vessel, where, after settling for some time, it is washed, and the liquid drawn off, leaving an impure crystalline sediment. This is once more boiled, and when it arrives at a proper state, which is learned by practice, it is poured into large earthen vessels with small mouths, and sunk into the ground to prevent their breaking. After a time the vessels are dug out, broken to pieces, and a lump of pure alum extracted. Six or eight measures, by weight, of alum are produced from ten measures of the substance from the irrigating beds, and four or five measures of potash."—*Capt. Grant's Geology of Cutch*, p. 295.

"One pound of alum is manufactured at Murr for about  $1\frac{3}{4}$  of a farthing, and transported to Bombay at an expense of about  $\frac{1}{2}$  of a farthing, so that whatever alum fetches in the Bombay market beyond the above, amounting to rather more than two farthings a pound, remains as a profit to the merchant and the state.

"Cutch alum sells for a considerably higher price than China alum.

"Alum and iron are only manufactured in the cold season, so that illustrations of the process of manufacture could not be procured."

Steatite black and white, from Arracan.

Marble slabs from Bellary; bricks made of white clay; marble mortar, rough—from the Ceded Districts.

Honestone from Toongabudra River, from Kurnool.

Lithographic stones, from Kurnool, Juggiapettah, and Datchapilly.

Rough and polished graphite; red and yellow ochre; potstone and mica, from Bengal.

Koorun or Corundum, from Salem and Malabar.

Talc, from Nepal.

Yellow ochre, from Malacca.

Limestone, from Hooz Mines, Arrakan.

Kunkur, from Hoogly.

Limestone, from Mirzpore and Silhet.

Kunkur and limestone, from Bengal.

Building stones from Cutch. These are principally calcareous.

Polished stones from Cutch. These are specimens of the different limestone formations in Cutch.

Stones of different kinds, potter's clays and earths, &c. from Nepal.

Marbles of Gooty, from Bellary.

Serpentine.

A plate of stone-like jasper, three of agate, two of green marble; two cups of jasper agate, two of brecciated agate; two pestles and mortars, and two of jasper agate; six squares of the above, three stones, and three rough blocks—from Jesselmere.

Primitive marble; serpentine; primitive limestone; red and yellow jasper; puddingstone; jasper; brown jasper; plastic, yellow, and slate-coloured clays; white kaolin earth; soapstone for stills; Kaksning garnets in serpentine, used for making pots and pans; and two bottles of Mehanet oil—from Assam.—Major Hannay.

Pipe-clay, yellow ochre, and clay, from Singapore.

Clay, from alluvial soil, from River Hooghly.

Limestone; tremenheerite; alabaster; petroleum; agate, cornelian, and calcedony; Ava gem sand—from Tennasserim Province.

Fossil trees, from Nerbudda.

Fossil woods, from Assam.

Petrifications and petrified woods, from Bengal and Mirzapore.

#### Mineral Substances from Madras.

- 1 White kaolin, from Ahloor, near Salem.
- 2 Magnesian kaolin, from hills near Vellore.
- 3 Kaolin, or porcelain earth, from Bangalore.
- 4 Magnesian kaolin, from Chingleput.
- 5 Kaolin, or porcelain earth, from Cuddapah.
- 6 Talcose kaolin, from Bimlipatam.
- 7 Kaolin, or porcelain earth, from Chittoor.
- 8 Fine white kaolin, from Travancore.
- 9 Kaolin, or porcelain earth, from Dindigal Hills.
- 10 Felspathic kaolin, from Trivatoo and Chingleput.
- 11—13 White kaolin, from Vellore or Arnee, Madras, and Chittoor.
- 14 Kaolin, from Salem.
- 15, 16 White kaolin, from Madura and Chicacole.
- 17 Kaolin, from Salem.
- 18 Magnesian kaolin, from Bellary.
- 19 Cream-coloured kaolin, from Atoor, near Salem.
- 20 Felspathic kaolin, from Tripathy Hills.
- 21 Cream-coloured kaolin, from Neilgherries.
- 22 White kaolin, composed of decayed felspar and soapstone, from Salem.
- 23, 24 Dirty yellowish and silicious kaolin, from Chingleput.

(Specimens of the rock of the hill above.)

- 25 Silicious kaolin, from Little Mount, Madras.
- 26 Pink kaolin, from Neilgherries.
- 27 Fawn-coloured kaolin, from Salem.
- 28 Red kaolin, from Salem.
- 29 Puce-coloured kaolin, from Bangalore.
- 30 Greenish yellow kaolin, from Bangalore.
- 31—35 Shale, a true fire clay, from Streepermatoor, Trepasoor, Chingleput, Mettopolium, and Cuddapah.
- 36 Rock crystal, from Tanjore.
- 37, 38 Rose and milk quartz, from Arcot.
- 39 Smoky quartz, from Nellore.

- 40, 41 Common quartz and hyalite, from Chingleput.  
 42 Amethystine quartz, from Vizagapatam.  
 43 Common thick fibrous amethyst, from Chingleput.  
 44 Flint, from Vizianagrum.  
 45 Magnesite, a pure carbonate of magnesia, from Nungungode.  
 46 Silicious magnesite, from Trichinopoly.  
 47 Soapstone, from Salem.  
 48 White and pink soapstone, from Ganjam.  
 49 Grey soapstone, or steatite, from Chittore.  
 50 Potstone, or lapis ollaris, with a pot cut of potstone, from Cuddapah.  
 51 Sulphate of baryta, or heavy spar, from Kurnool.  
 52 Corundum, from Gopaul Chettyppollum, near west of Salem.  
 53 Adularia, from near Chingleput.  
 54 Pink and white felspar, from near Arcot.  
 55 Pegmatite, from Arcot.  
 56, 57 Zeolite and Indianite, from near Chingleput.  
 58 Adularia, from near Arcot.  
 59 White felspar, from Bamlipatam.  
 60 Felspar, from Chingleput and Salem.  
 61 Glossy felspar, near Arcot.  
 62 Varieties of felspar, from Naggery Hills, Madras.  
 63 Cleavelandite, from Coimbatore.  
 64 Pink felspar, from Chingleput.  
 65 Grey felspar, from Arcot.  
 66 Granular pink felspar, from Vizianagrum.  
 67 Common granular felspar, from Chingleput.  
 68 Fluate of lime, from Madura.  
 69 Satin spar, from Ceded Districts.  
 70 Cube spar, from near Salem.  
 71 Calcareous spar, from Ceded Districts.  
 72 Fibrous gypsum, very pure, from Bangalore.  
 73 Fibrous gypsum and varieties of sulphate of lime, from Kurnool.  
 74 Selenite, or glossy gypsum, from Trichinopoly.  
 75 Talc and mica, from Salem and Vizagapatam.  
 76 Hornstone, or chert, from Cuddapah.  
 77 Black chert, from Tarputty.  
 78 White quartz (occurs in blocks of enormous size), from Chingleput.  
 79 Iron flint and grey nummulite, from Chingleput.  
 80 Flinty slate, from Kistnah, below Rachore.  
 81 Pipe-clay, white, from Neilgherry.  
 82 Grey ball clay, from Poonamallee.  
 83, 84 White ball clay, from Chicacole and Huttanoor.  
 85 Blue ball clay, from Cuddalore.  
 86 Grey ball clay, from Poonamallee.  
 87 Yellow ball clay, from Streepermatoor and Red Hills.  
 88 Grey salt glaze clay, from Salem.  
 89 Light spongy clay, from Chingleput.  
 90 Yellow magnesian clay, from Red Hills, Madras.  
 91 Tough yellow clay, from Chingleput.  
 92 Yellow magnesian clay, from Poonamallee.  
 93, 94 Grey magnesian and tough grey clays, from Streepermatoor.  
 95, 96 Grey and yellow clays, from Salem.  
 97 Puce-coloured clay, from Cuddapah.  
 98 Lavender-coloured clay, from Bellary.  
 99 Red magnesian clay, from Red Hills, Madras.  
 100, 101 Tough brown and dark-brown clays, from Madras.  
 102 Black bituminous clay, from Rajahs Choultry, Madras.  
 103 Black clay, from Salem.  
 104 Black tank bed clay, from Chingleput.  
 105 Black clay (the matrix of the sulphate of lime), from Monegar Choultry, Madras.  
 106 Regur, or black cotton soil (yields a fine tough clay by washing), from Bellary.  
 107 Silt, from Chingleput.  
 108 Grey stony silt, from Telaveram Hill.  
 109 Green stony silt, from Streepermatoor.  
 110 Grey silt, from Cuddapah.  
 111 Yellow and red ochrey clay, from Tilaveram.  
 112 Bastard fire-clay, or shale (contains gyrogonites or fossil seeds), from Tilaveram, Streepermatoor.  
 113, 114 Yellow and orange marl, from Chingleput.  
 115 Light red marl, from Salem.  
 116 Dark red marl, from Chingleput.  
 117 Purple marl, from the Monegar Choultry, Madras.  
 118, 119 Brown and grey marl, from Chingleput.  
 120 Dark-grey magnesian marl, from Red Hills, Madras.  
 121 Greenish-white marl, from Chingleput and Wallajabad.  
 122, 123 Greenish-yellow earth and friable lithomarge, from Bangalore.  
 124 Indurated lithomarge, from Cuddalore.  
 125 Rock crystal, from Toomboodra.  
 126 Smoky quartz, from Tanjore.  
 127 Agate and calcedony, from Rajahmundry.  
 128 White quartz, from Tilaveram Hills, Madras.  
 129 White stone, or albite, from Pellaur River.  
 130 Hyalite, from Nellore.  
 131 White sand, from Madras.  
 132 Variety of ice spar, from Salem.  
 133, 134 Glassy felspar and pegmatite, from Arcot.  
 135 Green stone, from Tilaveram Hills.  
 136 Venetian talc, from Salem.  
 137 Common salt, from Masulipatam.  
 138 Refined salt, from Nellore.  
 139 Magnesia, or magnesite, from Salem and Trichinopoly.  
 140 Epsom salts (prepared from the Salem magnesite, by Dr. Lima), from Port Novo.  
 141 Saltpetre, from Errode and Salem.  
 142 Purified saltpetre, from Gunpowder Manufactory, Madras.  
 143 Carbonate of potash, from Madras.  
 144 Purified carbonate of soda prepared from Dhoby's (Washerman's) earth from Madras.  
 145 Alum, from Vizianagrum.  
 146 Baryta, from Cuddapah.  
 147 Bichromate of potash (prepared from chromate of iron), from Port Novo.  
 148 Prepared lime (from the shells on the beach), from Madras.  
 149, 150 Greyish-white and yellowish-white marbles (granular), from Cuddapah.  
 151 Yellow marble, from Gooty Hills.  
 152—155 Green, pink, grey, and lavender-coloured marbles, from Cuddapah.  
 156—158 Purplish-coloured, wax-coloured, and bluish-grey marbles, from Ceded Districts.  
 159 Grey and yellow marble, from Rylcherro, near Cuddapah.  
 160 Black marble, from Tarputty.  
 161 Grey lithographic marble, from Datchapilly.  
 162 Grey lithographic marble, from Cuddapah.  
 163, 164 Yellowish-grey lithographic marble, from Kurnool and Juggiahpett.  
 165, 166 Dolomite, or magnesian limestone, from Travancore and Rajahmundry.  
 167 Calcareous limestone (from the vicinity of the fossil shell lime), from Trichinopoly.  
 168 Porphyritic dolomite (occurs under the yellowish limestone), from Cuddapah.  
 169 White and grey nodular limestone, from Chingleput.  
 170 Kunkur, a variety of nodular limestone, from Cuddapah.  
 171 Septaria, or hydraulic cement stones, from Chingleput.  
 172 Shells, from the beach, Madras.  
 173 White granite, without mica, from Arcot.  
 174 Compact white granite or pegmatite; the same, converted artificially into kaolin by steeping in lime-water; from Chingleput.  
 175—177 White granite, green and pink granite, and labradorite, or variegated felspar, from Chingleput.  
 178 Porphyritic pink granite, containing small crystals of tourmaline, from Seringapatam.

- 179 Flesh-coloured granite, from Chingleput.  
 180 Syenite, from Arcot.  
 181, 182 Pink granite and syenite, from Bangalore.  
 183 Grey granite, from Cuddapah.  
 184 Bright red granite, from Bangalore.  
 185 Pinkish granite, from Bellary.  
 186 Mica schist, from Cuddapah.  
 187 Mica schist (occurs with plumbago), from Bimlipatam.  
 188 Porphyritic granite, from Chingleput.  
 189 Porphyry (composed of basalt and quartz), from Bangalore.  
 190 Porphyry (composed of silicious limestone and large crystals of felspar), from Cuddapah.  
 191 Porphyry (composed of silicious paste, embedding fragments of jasper, quartz, and felspar), from Allumpilly.  
 192 Porphyritic conglomerate, from Cuddapah.  
 193 Silicious eurite, a variety of greenstone, from Bangalore.  
 194, 195 Greenstone, from Tilaveram Hills and Nellore.  
 196 Hornblende, from Hoonsoor.  
 197 Hornblende schist, from Bangalore.  
 198 Basaltic hornblende, from Arcot.  
 199 Basalt, from Dunnel.  
 200 Black slaty limestone, from Cuddapah.  
 201 Serpentine and serpentine porphyry, from Bangalore.  
 202 Spongy clay ironstone, from Red Hills.  
 203 Slate for roofing or building, from Kalidgee.  
 204, 205, 206 Building slate; slate, containing large grains of iron pyrites; and roofing slate, from Cuddapah.  
 207 Polishing slate, from the Ceded Districts.  
 208 Slaty marble, from the Tumbbovra.  
 209 Whetstone, from Kistnah River.  
 210 Grey whetstone, from Nellore.  
 211 Yellow whetstone, marked, No. 67, from Cuddapah.  
 212 Grey flinty slate, from Tilaveram Hills.  
 213 Grey soft aluminous whetstone, from Bunkrapett.  
 214 Aluminous slate, from Cuddapah.  
 215 Sandstone, from South Arcot.  
 216, 217 Sandstone or freestone, from Nellore and Kencattagherry.  
 218 Sandstone, from Nellore.  
 219 Aluminous shale, yields sulphate of alumina, from Chingleput.  
 220 Sandstone, embedding gyrogonites, from Streepermatoor.  
 221 Compact aluminous shale, from Nuttum Hill, Chingleput.  
 222 Claystone, from a bed of marl, from Chingleput.  
 223 Diamond breccia, from Allumpilly.  
 224 Hyacinth, from Nuttum Hill, Chingleput.  
 225, 226 White and blue sapphires, from Kangagum, Coimbatore.  
 227 Lepidolite, from Cuddapah.  
 228 Clevelandite, or precious felspar, from Chingleput.  
 229 Clevelandite, from Vizagapatam.  
 230, 231 Emery and corundum, from Gopaulchetty Pollium.  
 232-234 Red, blue, and green corundum, from Shalsharaiyn and Salem.  
 235 Beryl, or aquamarine, from Kangayum, Coimbatore.  
 236 Schorl, from Gopaulchetty Pollium.  
 237 Tourmaline, from Salem.  
 238 Precious garnet, from Condapilly.  
 239 Common garnet, from Bangalore.  
 240 Amethyst, from Hyderabad.  
 241 Agate, from Rajahmundry.  
 242 Cat's-eye, from Kistnah River, Rachore.  
 243, 244 Jasper porphyry and jasper, from the Ceded Districts.  
 245 Rock crystal, from Naggery Hills, Madras.  
 246 Common opal, from Kistnah.  
 247 Calcedony, from Rajahmundry.  
 248 Cornelian, from Godavery.  
 249 Onyx, from Kistnah.  
 250 Bloodstone, from Salem.  
 251 Wood opal, from Madura.  
 252 Petrosilex, or petrified wood, from South Arcot.  
 253 Sandstone coloured by gold, from the Western Ghaut.  
 254-256 Menacranite, or oxide of titanium; oxide of titanium, with micaceous ore; and variegated copper ore, very rich in metal, from the Neilgherry Hills.  
 257, 258 Grey and green copper ore, rich in the metal; and liver-coloured copper, from Guntoor.  
 259 Dark red copper, from Tadah Talooch, Guntoor.  
 260 Compact copper-glance and grey copper ore, from Copper Mountain, Bellary.  
 261 Malachite and purple copper ore, poor in metal, from Nellore.  
 262 Black, green, and grey copper, from Naggapatt Talook, Nellore.  
 263 Fibrous grey manganese ore and dendrites, from Mahratta country.  
 264 Black clay, containing black oxide of manganese, from Neilgherry.  
 265 Umber, or brown oxide of manganese and iron, from Neilgherry.  
 266 Native antimony, and grey antimony ore, from Vizianagrum.  
 267, 268 Radiated grey antimony ore, or sulphuret of antimony; and galena, or lead-glance, from Kurnool.  
 269 Galena, or sulphuret of lead; occurs in beds of limestone and sulphate of baryta, from Cuddapah.  
 270 Chromate of iron, from South Arcot.  
 271 Chromate of iron, from Salem.  
 272 Cube-ore, or arseniate of iron, from Guntoor.  
 273 Terrestrial native iron, highly magnetic, from Salem.  
 274, 275 Common iron pyrites; and hepatic iron ore, or liver pyrites, from Cuddapah.  
 276 Common magnetic ironstone, from Chingleput.  
 277 Iron sand, or arenaceous magnetic ironstone, from Calicut.  
 278 Iron sand, from Madras.  
 279 Earthy magnetic ironstone, from Chingleput.  
 280, 281 Specular iron ore, or iron-glance; and scaly red iron ore, or red iron tooth, from Vizagapatam.  
 282 Ochry red ironstone, or red ochre, from Chingleput.  
 283 Common red ironstone, from Cuddapah.  
 284 Red hæmatite, from Vizianagrum.  
 285 Red hæmatite, or fibrous red ironstone, from Chingleput.  
 286, 287 Compact brown ironstone; and brown hæmatite, or fibrous brown ironstone, from Red Hills, Madras.  
 288, 289 Compact black ironstone, from Chingleput and Salem.  
 290 Black hæmatite, from Tilaveram Hills.  
 291 Sparry ironstone, from Kurnool and Cuddapah.  
 292 Jaspersy clay ironstone, from Soondoor.  
 293 Common clay ironstone, from Red Hills.  
 293a Laterite, from Madras.  
 294 Reniform, or kidney-shaped clay ironstone, from Red Hills, Madras.  
 295 Meadow ore, or conchoidal bog iron ore, from Tilaveram and Vizagapatam.  
 296 Vesicular iron ore, from Bangalore, Chingleput, Nellore, and Salem.  
 297 Vesicular iron ore, from North Arcot.  
 298, 299 Black band iron, from Soondoor, Salem, and Chingleput.  
 300 Iron ore, from Kurnool.  
 301 Purple oxide of iron, Cuddapah.  
 302 Octohedral crystals of peroxide of iron, from Salem.  
 303 Silvery white kaolin, from Bimlipatam.  
 304 Cream-coloured ochre, from Salem.  
 305 Warm stone-coloured ochre, from Chingleput.  
 306 Pure stone-coloured ochre, from Bangalore.  
 307 Flesh-stone coloured ochre, from Salem.

- 308 Dark shade of grey ochre, from Nuttum.  
 309 White ochre, or porcelain earth, from Bangalore.  
 310 Pale yellow ochre, from Nuttum Hill.  
 311 Deep yellow ochre, common in the bazaar at Madras.  
 312, 313 Orange ochre, made from the yellow ochre by heat, and bright yellow ochre, from Cuddapah.  
 314 Roman ochre, from Chingleput.  
 315 Lavender-coloured ochre, from Bangalore.  
 316 Brown-coloured ochre, from Chingleput.  
 317 Salmon-coloured ochre, from Salem.  
 318 Venetian red, from Madras.  
 319 Light red ochre, prepared from the yellow ochre, from Nuttum Hill.  
 320 Antwerp red, from Ganjam.  
 321, 322 Indian red and purple ochre, from Chingleput.  
 323, 324 Raw and dark umber, from Neilgherry.  
 325, 326 Raw and burnt sienna, from Salem.  
 327 Cologne brown, from Neilgherry.  
 328 Peroxide of manganese, from Mahratta country.  
 329 Plumbago, or black lead, from Vizianagram.  
 330 Iron sand, from Bimbilipatam.  
 331 Ultramarine, prepared from the lapis lazuli, from Bombay.  
 332 Alumine, coloured with madder; lake, prepared from the munjathe, or madder, from Chingleput.

## CLASS II.

## CHEMICAL AND PHARMACEUTICAL PROCESSES AND PRODUCTS.

[Though the Arabs usually obtain credit for having given origin to chemistry, there is every probability that the Hindoos were acquainted with all the substances and preparations which are mentioned in the work of Geber, the earliest Arabian chemist. The chemical substances enumerated by him are all met with in India: some of the names by which they are designated seem to be derived from the names of the same substances in India, as *saggi-mea*, from *saggi noon*, signifying soda salt. The acids, also, which the Arabs prepared, the Hindoos have processes for making and still continue to make, by methods as simple and with an apparatus as rude as in the most ancient times. The Arabs, moreover, have been proved to have been acquainted with, as they have quoted from, the most ancient Hindoo works on medicine, in which most of these chemical substances are mentioned. In the present day, however, the chemical products of the East are not of a nature to bear favourable comparison with those of the West. Few, therefore, of such have been sent for exhibition, and those only which are employed in medicine; while others have been prepared in the East India Company's dispensary in Calcutta, with the aid, of course, of European superintendence: of these the specimens of sulphate of magnesia are interesting, as made from the magnesite or natural carbonate of magnesia of the Peninsula. The hydrochlorate of ammonia is obtained in considerable quantities from brick-kilns in which animal manure is used as a fuel.

Among the medicinal substances obtained from the vegetable kingdom, several are already well known in Europe. The senna and the colocynth may be noticed as good in quality and coming from new sources. What is commonly called India senna is the growth either of Arabia or of the east coast of Africa, being first imported into Bombay and thence sent to this country. The seeds of *Ipomea carulea* and the roots of *Convolvulus turpethum* are interesting as belonging to the same natural family as the jalap and scammony, and both used, as these are, as purgatives. The seeds of the *Ipomea carulea* are, probably, the *hub-al-nil*, or *granum nil*, of the Arabs.

They are much esteemed in India, as being quick and yet mild in their action. The gamboge of *Garcinia tinctoria*, collected by Dr. Hugh Cleghorn, was first discovered many years ago. Dr. Christison has lately shown that both as a pigment and as a purgative it is very effective. It may be obtained in considerable quantities in the forests of Mysore and of Malabar.

The chiretta (*Agathotes chirayita*), of the family of Gentians, as a bitter tonic, is highly esteemed in all parts of the Bengal Presidency, especially in the form of cold infusion, as the kroat or creyat (*Justicia paniculata*) is in the Peninsula of India. This became celebrated as the basis of the *Droge amere*.

The oil of *Celastrus nutans* was exhibited by the late Dr. Malcolmson in the treatment of beriberi. The *Hemidasmus* is valued as an efficient substitute for sarsaparilla. The *Calotropis gigantea*, and another species, *C. Hamiltonii*, may be employed as substitutes for ipecacuanha, and are esteemed as alteratives in many skin diseases. Of the animal substances, the blistering beetle (*Mylabris cichovei*) employed in India is interesting as belonging to the same genus as that described by Dioscorides.

Several other medicinal substances, or which may be used as such, may be found among the spices and intoxicating drugs, gums, resins, and oils, and among astringents. Most of the medicines known in India may be seen in—

*The Collection of Mineral, Vegetable, and Animal Substances useful in Medicine and the Arts, collected in the Bazaars of India, by J. FORBES ROYLE, M.D.* See the list at the end of Class IV.

Specimens of Aconitina, obtained by two processes from the roots of *Aconitum ferox*, imported from the Himalayas, are interesting, as difficulties have been experienced in obtaining the alkali. They are exhibited by Mr. W. Headland, of King's College.]

## MEDICINAL SUBSTANCES.

*From the Bengal Presidency.*

Borax, refined; Acid, nitric; Acid, benzoic.

Arsenious acid; Realgar; Orpiment; Mineral carbonate of soda; Sulphate of soda; Saltpetre; Sulphate of copper; Carbonate of lead; Litharge; Minium; Cinnabar; Corrosive sublimate; Magnesite; Magnesiæ sulphas; Hydrochlorate of ammonia.

Cannabis, Ind. ext. and tinct.; Nux vomica; Nux vomica bark; Aconitum ferox; Aconitum tincture; Castor-oil seeds; Cassia fistula; Senna leaves; Gamboge; *Ipomea carulea*; Cheretta; Cheretta extract and tincture; Colocynth; Colocynth extract; Catechu; Assafetida; *Calotropis gigantea*; *Calotropis* powdered; *Hemidesmus indicus* (Anantomool).

*Mylabris* (Meloe) trianthemæ (Native blisterfly)—From E. I. Company's Dispensary, Calcutta.

Hill honey; Gall nuts; Oil of eubebs and croton; Mustard oil; Grass oil; Gurjum oil; Medicinal opium; Morphia; M. Hydrochloras et Acetas; Hyoscyami, fol.; Hyoscyami extract. et tinctura; Stramonii sem.; Cannabis indica; Malkungnee, or *Celastrus nutans*; Myrica sapida (bark of the); Anuntamool, or substitute for sarsaparilla; Momordica, sp.; Mishmee bitter or Mishmee tita, *Coptis teeta*.—E. I. Company's Dispensary, Calcutta.

Jabrang, fruit of (*Xanthoxylum*), used in medicine; Nux vomica—from Assam.

Gmelina arborea; Echites antidysenterica; Menispermum cordifolium; Cyperus munga; Helicteres isora; Sphaeranthus, sp. moondee; Cheretta (*Agathotes chirayita*); *Xanthoxylis*, sp. Budrunga Tej-baul; Rheum emodi; Fæstidea Mauritiana?; Pongamia arborea; Swietenia febrifuga; Althea, sp. Khutmee; Serratula, sp. Kasnee; Semecarpus anacardium; Gardenia dumeto-



rum; *Fumaria officinalis*; *Adiantum cordatum*; *Barringtonia acutangula*; *Cordia grandiflora*; *Momordica muricata*; *Embelia robusta*; *Linaria* sp. *Sterculia ramosa*; *Asparagus officinalis*; *Cassia fistula*; *Cucumis*, sp. *Kuchree*; *Plumbago zeylanica*; *Cesalpinia Bonducella*; *Tribulus lanuginosus*; *Argemone mexicana*: *Sarsaparilla*, substitute for; *Anuntamool*, from Patna; *Punica granatum*, rind of the fruit and bark of the root; *Tejraj*, *Bajraj*, *Kamraj*, *Doobraj*, and *Madhooraj*, from Bhagulpore; Yew leaves, marked *Podocarpus nana*; *Acorus calamus*, oil of *Cubebs*; *Choulmoogra odorata*, *Choulmoogra*; oil of *Croton*; *Camphor* from Borneo; *Cubebs*; *Cheena kuwab*; *Piper cubeba*, sent from Calcutta.

The following medicinal substances, used by the natives of Arrakan, are communicated with their local names and supposed properties. They are nearly all said to be of common occurrence throughout Bengal:—

*Guararan*, a carminative; *Shuedelai*, a powder for sores; *Danzagoophroo*, tonic alterative; *Gnapoongtsay*, a carminative; *Mahaga*, drastic purgative; *Toungyen Khat*, astringent; *Thamaga*, carminative and tonic; *Thetyeng*, tonic, aperient; *Thabeyah*, carminative; *Kamaungkha*, refrigerant; *Kankyautner*, tonic aperient; *Let-topkyee*, astringent; *Nwasheagyer*, sedative; *Kokkho*, tonic aperient; *Hting*, tonic; *Pwabet*, expectorant; *Thesyenggyee*, warm purgative; *Thaweng poukphyee*, expectorant; *Teermakhan*, tonic; *Tabwot*, a carminative; *Maor*, refrigerant; *Oayet*, refrigerant; *Touksha*, carminative; *Oabathaga*, aperient; *Toushouk*, tonic; *Kyoapmyet*, febrifuge; *Nanloogyng*, tonic aperient; *Tsengthamanway*, laxative; *Pouknet*, tonic and carminative; *Tabatsay*, febrifuge; *Karawee*, tonic; *Thanly etgnai*, laxative; *Wow-oo*, febrifuge.

Java medicines, a series of, forwarded from Singapore.

#### From Bombay.

Oondee oil (Tanna). *Calophyllum inophyllum*, oil expressed from the nut, used as a stimulant externally and internally. Imported from Somali coast.

Kurunj oil (Tanna). *Pongamia glabra*, oil expressed from nut; used externally as a stimulant.

Senna leaves. Now grown in quantities in the Dekkan for the supply of Government stores; but no demand elsewhere. Four consignments have been sent to England. The first afforded a remittance about 2s. 2d. per rupee; of the second and third no accounts have yet been received; the fourth was sent last month (December 1850), its price as at present bought from the Ryots is 9 lbs. per rupee, being 2½d. per pound, or thereabouts.

#### From Madras.

Calabunda (*Aloe perfoliata*)—from Vizagapatam.

Gamboge—from Canara; ditto collected by Dr. Cleg-horn, from Madras.

*Hemidesmus indicus*; *Convolvulus turpethum*, root and powder; *Clitoria ternatea* seed and powder; *Cannabis indica* (flower's tops).—Professor Key, from Madras.

Specimens of *Mylabris cichorei*; *Pulvis mylabris cichorei*; *Tinctura cannabis sativæ*; *Hoya viridiflora* (*Asclepias vomitoria*); *Hymenodictyon utile*; *Soyimida febrifuga*; Dry bark of the mullay or jungle margosa; Dry bark of the vapum or margosa tree; *Croton* seeds.

Napaula oil (*Croton tiglium*)—from Vizagapatam and Ganjam.

*Justicia paniculata* creyat. Specimens of salt—from Nellore.

### CLASS III.

#### AGRICULTURAL PRODUCE.

[From the latitude and general climate of the different parts of India, it would naturally be inferred that the agricultural products must differ very considerably in the widely-separated provinces, and that they must certainly be entirely different from those of Europe, especially as the natives of the country are usually stated to live chiefly upon rice. This is a fallacy which has no doubt

originated from Europeans having obtained their principal information respecting India from its southern provinces. It would not, perhaps, be too much to say that probably the number of those who seldom taste rice far exceeds those who live upon it. For, in fact, the culture of wheat and barley, and of common millet, constitute the agriculture of many parts of the country quite as much as rice, sugar-cane, and other millets. This is in consequence of the seasons of cultivation being very different, one set of the cereal grains being sown in autumn, and grown during what constitutes the winter of Europe, while the other are sown in the midst of its summer. Thus wheat, barley, and common millet (*Panicum miliaceum*), are sown in October and reaped in March, while rice, maize, the great and Indian millets, are sown on the accession of the rainy season in June, and harvested in September or October.

Of wheat several varieties are grown: some of very fine quality, as the soft wheat, called *pyssee*, and the hard wheat, called *jullalya*, both exhibited from the Nerbudda valley. Samples of these shown a few years ago in Mark Lane were considered to be finer than any wheats in the market. The soft wheat, which is most valued in this country, is thought less of in India, where the natives prefer the hard wheat, and give a higher price for it, as they consider it the most nutritious. Like the hard wheats of the south of Europe, this variety is used in India for making a kind of vermicelli, and was thought to contain a large proportion of glutinous matter; but this did not appear when the two kinds were analyzed by Professor E. Solly. Wheat is cultivated as far south as Burma, from whence a brownish-coloured variety has been sent, and at considerable elevations in the Himalayan Mountains, where some fine kinds of barley are also grown. Oats have been introduced by the English, and are produced of fine quality in the district, and to the northward, of Patna.

Indian corn or maize (*Zea mays*), a native of the New World, is cultivated in small quantities all over India, but not as a principal crop, being chiefly eaten in a green state and after the grains have been roasted. The great millet, or *Durra*, of the Arabs, *Joar*, and *Jawaree* of India (*Sorghum vulgare*), occupies the place of Indian corn in Asia, where it is extensively cultivated, and forms a principal article of diet of the natives. The grains are large, and in chemical composition come near to Indian corn, but are apt to be attacked by the weevil. The other millets, species of *Panicum*, &c., small in size and hard, are also much used as articles of diet, and might, from their cheapness, perhaps, be profitably exported as food for the smaller animals in other countries.

But, besides the cereals, the natives of India cultivate a great variety of pulses, some of which are known in Europe as the pea, lentil, gram (*Cicer arietinum*). Others, such as varieties of *Cajanus* and of *Phaseolus*, also yield pulses which, like the cereals, are cultivated for food. These, being cooked with ghee or melted butter, give the natives the advantage of a mixed diet, instead of their subsisting, as usually stated, on a single substance like rice.

The different oil-seeds also occupy a share of the farmers' attention: of these linseed is well known in Europe, but in India is cultivated only on account of the seed-oil, and not for the flax of the plant. Also, mustard and rape, or rather other species of *Sinapis*, safflower seeds (*Carthamus tinctorius*), castor-oil plant, poppy, brown and white til or sesamum, and black til (*Guizotia oleifera*). For other oils, see OIL SERIES AND MEDICINES.

Among the roots cultivated, yams and sweet potatoes may be mentioned; also, turmeric and ginger, onions and garlic. Carrots often yield a large crop with the aid of irrigation, but the climate is not favourable for the field culture of turnips. Melons and cucumbers are also cultivated near wells, or in the beds of rivers, as also several of the fruits used as condiments, as coriander, cummin, &c.

(A.) *Cereals.*

Wheat:—Pissee, sohalya, jullalya, kutya, varieties of *Triticum sativum*, from the Valley of the Nerbudda.

Flour; three qualities, from native mills, Calcutta.

Wheat, a dark-brown variety, from Burma.

Oats (*Avena sativa*), from Patna.

Bansafal rice, and some of its straw, from Hooghly.

Rice (*Oryza sativa*), and paddy, or unshelled rice, from Kémaon.

Black and red paddy (*Oryza sativa*), from Bellary.

Varee rice and paddy, from Travancore.

Varee Nelloo, paddy, from Calicut.

Wild rice:—Junglee dhan and Cheenia dhan, from Nepal.

Table rice:—Indramayo, from Singapore.

Pulut rice, a delicacy, prized for its nutritious qualities; and a dark variety, from Malacca.

Rice, and a variety of, Ketana, from Singapore.

Rice, varieties of:—Bansmutti, Hunsraj, Race Monea, Dalvanjan, Sookhannud, Ramkajul, Teluk, Sookhundea, Unjhunna, Dhooce, Sathee, Seorah, Herunj, Gujraj, Bettea, Anundee, Buttesea, Hamoona, Kulma, Ramajan, Mattea, Knomoolie, Dhow, Soonkhur, Kumera, Doodhie, Beorah, Sookhurra, Moonree, Buthka, Jhunoa, Motuchoor, Jubbedic, Jhunvan, Najar, Mahestua, Gowree. There are two specimens of each, one shelled, the other unshelled; from Pilibet in Rohilkund.

Rice, varieties of, from Arrakan.

Rice from Ahmedabad. This is much prized for taste and scent, and large quantities of it are annually exported to Baroda, Cambay, and elsewhere.

White, black, and glutinous red rice, from Tennasserim.

*Millets.*

Great millet or *durra* of Arabs.—Joar of India.

*Sorghum vulgare* and *saccharatum*, large and small; grown all over India.

Red, white, and brown Cholom or jawaree, from Bellary and other parts of India.

Indian corn, varieties of, from Nepal and Assam.

Indian millet, Bajree (*Penicillaria spicata*), from India, Bellary, and Cutch.

Italian millet (*Setaria italica*), from Calcutta; Koongoonie (*Panicum italicum*), from Bellary; Kungnee, from Nepal; Kadi kane (*Panicum miliaceum*), from Madura, Tinnivelly, and Palamcottah; Sanwuck, *Panicum frumentaceum*, from Ghazepore, Meerut, and Nepal; Koda, *Paspalum scrobiculatum*, from Nepal and Calcutta; Mundaya, Raggee (*Eleusine corocana*), from Bellary, Mirzapore, Meerut, and Kémaon; Chooa (*Amaranthus farinaceus*), from Kémaon; Razgeera (*Amaranthus frumentaceus*), from Bombay.

Surgooee grain (*Eleusine sp.*), from Hoogly.

Goorura and Tipsa, small millets, produced by wild *Panicums*, from Mirzapore.

Buckwheat:—Oogul (*Fagopyrum vulgare?*), from Kémaon and Nepal.

*Pulses.*

Urhur ke dhal; Dial (*Cytisus cajan*), from Gwalior, Madura, and Tinnivelly; Dhol or thoravi, from Palamcottah; Tor var. (*Cytisus cajan*), from Bellary; Urhur (*Cajanus indicus*), from Calcutta; Gram, Chuna (*Cicer arietinum*), from Bellary; Dhol Chuna, grown all over India; Chuna (*Cicer arietinum*), from Calcutta.

Mash (*Phaseolus mungo*), from Bellary; Mash and Dhol mash, grown all over India; Mash (*Phaseolus mungo*), from Nepal.

Green gram:—Moong (*Phaseolus radiatus*), from Bellary and Madras.

Green gram:—Moong, grown all over India.

Black gram:—Moong, variety of (*Phaseolus radiatus*), from Vizagapatam and Ganjam.

Black gram, grown all over India.

Muskully (*Phaseolus radiatus*), Sona moog (*Phaseolus aureus*), Kista moog (*Phaseolus*), Kalle moog (*Phaseolus*), Mayance (*Phaseolus trilobus*), from Calcutta; Lall Gooonah (*Phaseolus trilobus*), from Kémaon.

Horse gram:—Cooltie (*Dolichos uniflorus*), from Bellary; Gahut (*Dolichos uniflorus*), from Kémaon and Nepal.

Red gram (*Dolichos catjang*), grown all over India.

Red and white gram (*Dolichos catjang*), from Vizagapatam and Nepal; Thatapyre (*Dolichos catjang*), from Madura, Tinnivelly, and Palamcottah; Banzampesalee, Vizagapatam; Bhut (*Saja hispida*), from Kémaon.

Peas:—Muttar (*Pisum sativum*), Goll muttur (*Pisum sativum viride*), from Calcutta and Nepal; Mussooree kullye (*Ervum Lens*), Soora kissurree (*Lathyrus sativus*), Baro Chuna (*Vicia sativa*), from Calcutta.

Katjang zavah, Katjang merah, Katjang tjee, Katjang zungak, Katjang batoo, pulses, from Java.

French beans, sem, from Nepal.

Green peas, or pulse, Catjang ejoo; Catjang tahoo, from Singapore, Sumbawn, and Sumatra.

*Roots and Oil Seeds, &c.*

Onions and onion seed, from Jessulmere.

Poppy seed, from Calcutta, Patna, &c.

Linseed, Tesea (*Linum usitatissimum*); Kisto til (*Sesamum orientale*)—from Calcutta.

Black til, Ram til (*Guizotia oleifera*)—from Bombay and Madras.

Castor oil seeds, Behrindu (*Ricinus communis*).

Mustard seeds, &c., Kala surson (*Sinapis dichotoma*); Shwet raee surson (*S. glauca*); Jhoone raee (*S. ramosa*)—from Calcutta.

Safflower and Soorj mookhee (*Helianthus annuus*).

Cucumber and melon seed, from Nepal and Bikaner.

Oil-cake, from Nepal.

Bamboo rice, from Nepal.

Bhatwas, Gooans, Shutya, and Mishoyang, from Nepal.

Iroopoo pinakoo, from Calicut.

(B.) *Dried Fruits and Seeds.*

[The fruits which are dried and preserved in India are not numerous. The tamarind is the principal, and is much employed in making sherbets: unripe mangos are preserved on account of their acidity. The ber, or byer, or jujube, is occasionally preserved, and baked plantains have been sent, but have not arrived in a good state. Figs, raisins, dried plums and apricots, are imported from Caubul; and dates from the Persian Gulf. The cocoa-nut is conspicuous as a seed which is valued for its kernel. Almonds and pistachio nuts are imported from Caubul; walnuts and hazel nuts from Cashmere and the Himalayas. The seed of Terminalia catappa is called badam or almond, and used as a substitute for it, as are many other oily seeds, by the natives of India. The dorian fruit (*Durio zibethinus*) may be considered rather as a curiosity: it is highly esteemed as a fruit in the Eastern Islands, notwithstanding its disagreeable odour. The preserved bel fruit (*Egle marmelos*) is valued, as a medicine, for its mild substringent properties. What is called *Muoha* fruit is only the flowers dried as they fall off. They abound in saccharine matter, and are eaten by the natives; and are also subjected to fermentation, when they yield a spirit which forms the common arrack of a great part of the country. Its flavour is compared by some to that of whiskey. The seeds yield a valuable oil which becomes solid in this climate. See OIL SERIES.]

Mangifera Indica, amchow; unripe mangos.  
Tamarinds (*Tamarindus indica*), from Calcutta and Java.

Dried byer (*Zizyphus jujuba*), from Bengal.

Muhooa fruit (*Bassia latifolia*), from Moorshedabad.

Cocoa-nut (*Cocos nucifera*).

Kanari nut (*Canarium commune*), from Java.

Dessy-a kroot (*Aleurites triloba*). The specimens forwarded are all that could be procured at the time they were ordered; they were obtained from Belgaum, where, in this Presidency, they chiefly grow. The Central Committee of Calcutta requested that this article might be sent from the Bombay Presidency. These are called Belgaum, or country walnuts. The nuts are so called from their resemblance to walnuts: the kernels taste like them, and yield a large portion of pure palatable oil.—*Bombay Report*.

(C.) *Substances used in the preparation of Drinks.*

[Tea is so peculiarly a Chinese product as to be almost a synonym of the country. From the difficulties at first experienced in producing good teas in Penang, Java, and Rio Janeiro, it was inferred that the soil and climate required for the tea plant were of so peculiar a nature as to render it difficult, if not impossible, to produce good tea anywhere out of China. This was no doubt owing in part to its having been supposed that the plant was one which required a hot climate. Careful comparison of the information which was then within reach made it probable that the plant or plants were natives of temperate climates. The author of this note gave it as his opinion, in the year 1827, that the Chinese tea plant or plants might be successfully cultivated in the Himalayan Mountains; and in an essay on the subject in his "Illustrations of Himalayan Botany," in 1834, entered into the details of facts, and his reasoning from them. The Indian Government having at this time determined to attempt the cultivation of tea in any suitable locality in these mountains, a plant was discovered in Assam, of which the leaves were there manufactured into tea, and which was supposed to be either the true, or a variety of the, tea plant of China. The plant, however, flourishes in a warm moist climate, and has much larger leaves than the China plants. This discovery, however, led to the establishment by the Indian Government of farms for the growth of tea. Chinese, acquainted with the processes, were invited into Assam to take charge of the manufacture. Success having attended the measure, the whole of the establishment was transferred to the Assam Tea Company, from whom some samples have been received: others are exhibited in another part of the building. Two samples have also been sent from Chinese planters who have settled in Assam.

At the same time that the culture of the indigenous plant was established in Assam, tea seeds were obtained from China; but chiefly from the most southern tea districts, from whence there is reason to believe most of the manufacturers have also come. The tea seeds on their arrival in Calcutta were sown in tubs, and the plants afterwards sent to Assam, as well as to Dr. Falconer, who planted them in nurseries in Kémaon and other Himalayan districts. There these Chinese tea plants grew and flourished even in situations where they were occasionally covered with snow. They flowered in the third year, and ripened their seed, from which time the culture has continued to encrease. Millions of seeds are sown annually, so as now to occupy about 1,000 acres, in different situations, from Kémaon to the hill tracts newly acquired from the Seiks. Some uncertainty existed at one time about the methods of making the best kinds of black and of green teas. Some who had resided at Canton having

stated that the Chinese made either green or black tea from the same plant; others, that they could not do so without the aid of colouring matters. There is no doubt that there are at least two species of tea plant: one, called *Thea bohea* by botanists, was supposed to be chiefly employed for making black teas; the other, called *Thea viridis*, was thought equally essential for making the green teas. The Chinese tea-makers in Assam in some measure settled the question by making both kinds of tea from the same plant: and Mr. Fortune, in his visits to the tea districts on the coast of China, ascertained that the plant called *Thea viridis* was that chiefly employed in making both kinds of tea and their several varieties. The *Thea bohea* could, of course, be employed for the same purpose in districts where it is indigenous, as the great difference depends upon the manufacture and not upon the plant. The processes have been fully explained in Mr. Ball's work on the Manufacture of Tea in China. They consist, in the preparation of *black tea*, in carefully-watched and regulated processes of *spontaneous heating, or slow fermentation*, of the leaves, until a certain degree of fragrance is developed. The leaves are said to *wither and give*, and become soft and flaccid. When the proper time has arrived, the leaves are removed to the roasting pan. After being roasted and rolled two or three times, they are dried in a cylinder of basket-work, which is placed over a small charcoal fire. After the drying has continued about half an hour, the leaves are turned and again submitted to the heat for another half-hour. They are then taken out, rubbed and twisted, and, after sifting away the small dust, again returned to the sieve and drying tub. The leaves now begin to assume their black colour. The fire is deadened by sprinkling some ashes over it. The operation of rolling, twisting, and sifting, is repeated once or twice until they have become quite black in colour, well twisted, and perfectly dry and crisp. They are then picked, winnowed, and further dried.

In the manufacture of *green tea*, the freshly-picked leaves are roasted in the kuo, or roasting-pan, at once, and at a high temperature; rolled and roasted again and again, assisted sometimes with a fanning operation to drive off the moisture, and always with brisk agitation until the drying is completed.

The great difference in the two processes consists in the black tea undergoing the process of fermentation, or withering, while the leaves for the green tea are roasted without undergoing any previous change. The two samples of green tea, the hyson and the gunpowder, were prepared from the same plants as the souchong, under the superintendence of Dr. Jameson, in the East India Company's tea nurseries in Kémaon and the Deyra Doon. The quantity of tea produced is yearly increasing. Comparatively little has as yet been sent to this country, for it sells at very high prices on the spot where it is produced; and the inferior qualities, it is curious to observe, are actually carried across the British frontier, and meet the teas of China in Tibet, where the Chinese authority extends.

Mr. Warrington has called attention to the means adopted for giving a facing to tea, as purchasers were not satisfied with the natural dull, yellowish-green colour of tea. The Chinese, therefore, apply Prussian blue, turmeric, and fibrous gypsum to give it a bluish-green colour.

Mr. W. has lately called attention to a new adulteration, in which tea-dust is held together by gum, and faced with Prussian blue, turmeric, and a large proportion of

fibrous gypsum; the black tea being faced with earthy graphite or black-lead. So great is the adulteration that, though genuine teas give only about 5 to 6 per cent. of ash, the *lie* gunpowder yielded 34 and 45.5 per cent. of ash; scented caper 5.5, but *lie* flower caper 22.5; and mixtures, containing these lies, from 11 to 22.5 per cent. of ash.

Coffee has, like tea, begun to be cultivated in British India. It is chiefly grown, however, along the mountains of the Malabar coast, as in Wynaad, and in the Sheravoy Hills, near Salem. Some of fine quality has also been sent from Chota Nagpore, and the south-west frontier of Bengal. We have also some coffee from Assam.]

Green, gunpowder, and black teas, from E. I. Company's tea plantations in the Himalayan mountains in Kémaon and Deyra Doon.

Hyson teas; grey, black, and orange-flowered pekoe; Souchong, Mongpo, from Assam Tea Company.

Souchong tea and orange pekoe, from Chinese in Assam.

Pekoe and Congou teas, grown on Government plantations, from Java.

Coffee, from Assam and from the South-west Frontier.

Coffee, from Calicut, and from Captain Morris.

Coffee (*Coffea arabica*), from Tinnivally.

Coffee, from Sheravoy Hills, near Salem.

Coffee berry, and in husk, from Aden.

Coffee, from Java and Borneo.

Coffee from Mr. Glasson's plantation, from Wynaad.

(D.) *Stimulating and Intoxicating Drugs.*

[This group includes, in the Indian collection, opium, hemp, tobacco, and a distilled spirit from an unusual source. Opium, as required for medical use and European consumption, is produced chiefly in Asia Minor, and is commonly known by the name of Turkey opium; but India produces large quantities—a portion for its own home consumption, but the great mass for export to China. The whole process of culture is displayed in a series of drawings, and all the apparatus employed in the preparation, that is, in the collection, mixing, and drying, of the drug, in the opium agency at Patna, is exhibited, together with the opium made up into balls, and covered with the petals of the poppy stuck together with the fluid part of the opium. Though this culture is a government monopoly in the Gangetic province, it is also extensively cultivated in the states of the native princes in Rajpootana and Malwa, from whence several specimens have been sent. Opium is produced of excellent quality in the Himalayas, where the tears, as collected, are simply pressed together and dried, as is the case with Turkey opium.

The hemp plant (*Cannabis sativa*), known in Europe for yielding strong fibre for ropes and canvas, is valuable in the East for its intoxicating properties. The plant is identical with that of Europe, and is the *Kinnub* of the Arabs, whence the name *Cannabis*. It is also known by the name *Hushceek*, and has a number of poetical names assigned to it, as "cement of friendship," "exciter of desire," &c., and is supposed by some to have been the *Nepenthes* of Homer. The whole plant dried is employed for smoking; or, the leaves and capsules, without the stalks, rubbed to a fine powder, and mixed with conserves or with milk, &c., are taken to produce intoxication. A resinous secretion exudes from the upper parts, especially of the flowering stems, and is collected in various ways, and known by the name of *Churrus*. This is used for the same purpose. It has lately been recommended as a medicine to allay rheumatic and neuralgic pains, as well as to control muscular spasm. Hence, preparations of it

have been included among the medicines sent from Calcutta.

The spirit from an unusual source is that which is distilled from the flowers of the muohwa tree (*Bassia latifolia*). These abound in saccharine matter. They are, therefore, as they fall, collected and eaten by the natives; but, subjected to fermentation, a spirit is produced, which, being distilled, forms the common arrack of many parts of India. The flavour has been by some compared to that of whiskey. The tree is particularly valuable, on account of its seeds yielding a vegetable fat, likely to be useful in candle-making. See OIL SERIES.

Tobacco, a plant of the New World, has come to be universally cultivated in Asia, as in Europe. The plant is grown with great care in many parts of India, especially in rich soil near villages. But the natives totally neglect the curing of tobacco, upon which so much of its value depends in the European market, either for smoking or for making into cigars. This, to the natives of India, is of less consequence, as they mix the dried leaves of tobacco with coarse sugar or conserves of different kinds to smoke in their hookahs. Some excellent tobacco is, however, produced in different and very widely separated parts of India, as Sandoway in Arrakan, different parts of the Peninsula, and in Central India. It is probable that such tobacco as is acceptable in the European market might be produced in India, if equal care was bestowed on the growth and curing as well as on the packing of tobacco. — (See *Illustrations of Himalayan Botany*, pp. 282 to 289.) But there is great consumption in the country itself, both for smoking and for making cheroots, of which several specimens have been sent for exhibition from Chinsurah, in the neighbourhood of Calcutta, as well as from Salem and Trichinopoly.]

Tobacco, Ishay, from Arrakan.

Tobacco, from Gwalior, Maharajah Rao Scindia.

Tobacco, from Malwa.

Tobacco and cheroots (*Nicotiana tabacum*), from Trichinopoly, Salem, and Java.

Cheroots of sorts, from Trichinopoly.

Cigars, from Java.

Cigars: imitation Manillas and Havannahs, common Chinsurahs, imitation Havannahs, made at Chinsurah, of Sandoway tobacco, and of picked Bengal leaf at Chinsurah.

Opium, from Gwalior—Maharajah Rao Scindia.

Opium, country, Kano, from Assam.

Opium, Thallawar, twenty-five, and Jhallawar three years old, from Rajpootana.

Opium, prepared, from Rajah of Kotah.

Opium, complete series, exhibiting whole process of manufacture, from Patna.

Opium, specimens of, from Benares.

Opium (Government), from Khandeish.

Opium, as taken from the field, as seed, and as prepared for exportation, from Malwa.

Opium, from Nepal.

Cheek opium. This and the two following articles form a complete series. The bhatted as prepared for exportation to China; the cheek or raw juice; the poppy head, containing the seed and showing the mode of incision by which the opium juice is extracted—the three lines together are one day's incision; each head will show how many separate days it was available.—Bombay.

Opium, from Kandeish. The specimen sent is from the government stores at Dhoolia, in Kandeish.

Hemp, Ganja (*Cannabis sativa*), from Rajpootana; Bhungeera and seed, from Kémaon; Ganja, from Calcutta; Churus and Ganja, from Nepal.

Muohwa flowers (*Bassia latifolia*), and spirit distilled from them, from Rajpootana.

(E.) *Spices and Condiments.*

[Spices are proverbially the produce of the Spice Islands; but they are not all obtained from these islands, and, of late years, those which were peculiar are now cultivated in other situations. The true cinnamon, for which Ceylon is famed, is also now cultivated in Java and Malacca, as well as in parts of the western coast of the Indian Peninsula. What is so called from Assam is rather a kind of cassia. Cassia and cassia-buds are produced on the Malabar coast. The cassia leaves, *Malabathrum* of the ancients (*Tamala putra*), are used for the same purposes as bay leaves in Europe. Nutmegs are now cultivated of excellent quality in Penang, whence they have been sent for exhibition, as well as from Singapore and Tinnivelly, in the Peninsula of India. The wild nutmeg (*Myristica tomentosa*) is the produce of a different species. Attempts have been made to introduce the true nutmegs, when gathered from trees growing wild, at a lower rate of duty; that is, for the same duty which these wild nutmegs are charged, though they are very inferior, and the produce of a different species of plant. Mace, which is one of the coverings of the nutmeg, is, of course, obtainable from all places where the nutmeg is grown. Black, round, and white pepper, the produce of one plant, are, as in the earliest times, grown on the Malabar coast. The capsicum, considered by botanists to be a native of the New World, is cultivated in every part of India, and universally employed as a condiment by the natives in their curries: that grown in Nepal is considered by many to be very high flavoured. The small cardamoms, like pepper, are long-established products of the Malabar coast. The large cardamoms are produced in the forests along the foot of the Himalayas, though the plant producing them has not been clearly made out. Among the small carminatives, the *Ptychotis ajowan*, seems worthy of notice, from the fineness of its flavour. It appears to have been one of the kinds of ammi of the ancients, and nearly allied to the *Ammi copticum*. The black seeds of *Nigella sativa* continue to be used as a condiment, as in the most ancient times, being the *Melanthion* of the Greeks.]

Ginger, a native of India, though extensively cultivated both on the plains and mountains of India, brings an inferior price in the English market to that from the West Indies, though it is there, probably, an introduced plant. If the Indian was more carefully cultivated and scraped, so as to become white ginger, it would, no doubt, bring a higher price; much of that from Travancore, as well as from Malabar, is of excellent quality. Turmeric, like ginger, is universally cultivated, being a common condiment in curries, and likewise used as a dye. Several varieties are grown in different parts of India.]

Cinnamon, from the Government plantations, Java, and from Malacca.

Cinnamon, or Cassia, from Assam.

Cinnamon, Darcheenee; cinnamon flowers, Darcheenee ka phool, from Nepal.

Cassia (*Cinnamomum albiflorum*), from Assam.

Nutmegs, from Penang and Tinnivelly.

Nutmegs, as plucked from tree and shelled, from Singapore.

Nutmegs, from Sarawak, Borneo.

Wild nutmegs, unshelled and shelled, from Ceram, Moluccas.

Mace, from Singapore, Tinnivelly, Penang, and Sarawak, Borneo.

Cloves, from Penang, Sarawak, Borneo, and Tinnivelly.

Cassia leaves, from Travancore.

Cassia leaves, Tejpat, from Nepal.

Spices, from Malacca.

Round pepper (*Piper nigrum*), from Assam.

Black pepper, from Travancore, Singapore, Sumatra, and Sarawak, Borneo.

White pepper, from Travancore, Singapore, and Sumatra.

Wild pepper, from Travancore.

Long pepper, from Assam and Java.

Peepul (*Piper longum*), from Bengal.

Cayenne pepper, from Sarawak, Borneo.

Bootan chillies (*Capsicum frutescens* and *Capsicum fastigiatum*), from Assam.

Chillies, from Bootan.

Small chillies.

Chillie pepper, Lal mirch, from Nepal; Tunboo, from Bhotan, Nepal.

Hill cardamoms, Paharie elachie, from Nepal.

Cardamoms, varieties of (*Elettaria cardamomum*), from Travancore.

Cardamoms, a kind of, from Assam.

Cardamoms (*Cardamomum medium*), from Bengal.

Coriander, Dhunee (*Coriandrum sativum*), from Assam and Nepal.

Cumin seed, Ajwain, and other carminatives (*Cuminum cyminum*, *Ptychotis ajowan*, *Anethum sowa*, *Nigella sativa*), from Bengal and E. I. Co.'s Dispensary.

Star aniseed (*Illicium anisatum*), imported into Calcutta from China.

Fennugreek, Methce, from Nepal.

Betel nuts (*Areca catechu*), from Assam.

Betel nut, Areca nut, from Travancore.

Betel nuts, from Sarawak (Borneo) and Singapore.

Mustard seed, kinds of, Race, Surson, Padshahee race, and Toree, from Nepal.

Ginger (*Zingiber officinale*), from Travancore.

Ginger, Udruk, from Nepal and Assam.

Zingiber Cassumnar, Bunada, from Bengal.

Turmeric (*Curcuma longa*), from Assam.

Turmeric (*Curcuma longa*), from Cuddapah.

Turmeric, from Java.

Turmeric, Huldi, from Nepal.

Sort of onion, Chappee, from Nepal.

Garlic, Lahson, from Nepal.

Sweet, Cashmere, camp, and cussoondie chuttnies; tap sauce; curry powder; guava jelly; pineapple marmalade; mango preserve; guava cheese—from Calcutta.

(F.) *Starch Series.*

[The name of this group will not indicate to the public all the substances included under it, as the term starch is usually applied to the preparation employed for giving stiffness to clothing of different kinds. The term is here employed to include a number of substances, often called arrow-root, obtained from various parts of plants, as the root and tubers, stem and fruits, usually in the state of white flour, insoluble in cold but easily dissolved in boiling water. For a long time the West Indian arrow-root (*Maranta arundinacea*) was considered the only good kind; but a very useful kind is yielded by a species of Canna, which is also cultivated in the West India Islands, and belongs to the same natural family. The *Maranta arundinacea* is now cultivated near Calcutta and in other parts of India. But large quantities of an excellent substitute are obtained in India from different species of *Curcuma*, all of which have not been clearly ascertained, though the arrow-root obtained from them has been sent from a variety of places. That of Travancore is known as a regular article of export; but it might be produced in large quantities from various parts of India.]

An analogous substance is the sago meal obtained from the stems of different kinds of *Phœnix* and of other palm trees in India. Of this, one kind has been sent from Cuttack. The so-called sago meal is deposited in the cellular

part of the stems of the sago palm (*Arenga saccharifera*), "the pith of which is the staff of life to the inhabitants of the Moluccas"—(*Roxburgh*). Sir John Maundeville says, "In that land grow trees that bear meal, of which men make good bread." The sago palm grows extensively in Sumatra, from whence the sago flour is imported into Singapore, and then granulated into the different kinds of sago. In the form of sago cakes it constitutes the principal food of the natives of the Moluccas, especially during their sea voyages. Plantain meal, obtained from the fruit of the plantain, or banana, may be employed for the same purposes, though it is not so white-looking as arrow-root. Plantains form a large portion of the food of the negroes in the West India Islands. In Guiana the meal is used as a nutritious article of diet.

The seeds of *Nelumbium speciosum* and of *Trapa bispicata* abound so much in starch, that it may be easily separated from them. Both are employed as articles of diet among the natives of India, and may well be arranged in the starch series.

Salep, or, as commonly called, *Salep misree*, may also be placed here, though the tubers are not exactly of the nature of starch, but consist of bassorin, or insoluble gum, with some soluble gum and starch. These tubers, produced by different species of Orchids, are highly esteemed in India for their nutritious qualities. The best kinds, which are brought from Candahar and Afghanistan to the Hurdwar fair, sell for a very high price. The kinds produced in India are, however, possessed of much of the same properties.

Along with the starch series are also ranged the different kinds of *Agar agar*, which have been sent from Singapore, and which are so much in request as objects of Chinese commerce. These are varieties of *Alga*, or seaweeds, very similar in their properties to Carrageen or Irish moss, and to Ceylon or Jaffna moss, which is collected at Jaffnapatam. They have by some been thought to be identical with it; but the specimens of Ceylon moss, in the author's collection, do not correspond with all these *Agar agars*; and it is probable, therefore, that some are yielded by different species of plants allied to the genus of the Ceylon moss, which is now called *Plocaria candida*.]

Arrow-root, kinds of, from Assam, Calcutta, Rutnagherry, Vizagapatam, Borneo, and Java. (*Curcuma angustifolia leucorrhiza*, &c.)

Arrow-root (*Rutnagherry*). The "Kutcherra," or root from which this flour is prepared, grows in all the villages in the southern Kōkun. It is used in the jail, where the quantity made during the year amounts to about 18 maunds, or 504 lbs. West India arrow-root was introduced into the gardens at Rutnagherry by the collector, Mr. Elphinston, in 1840 or 1841; it thrives exceedingly well, but it is not grown to any extent. The quantity of flour prepared from this root is about one maund, or 28 lbs. (annually?) as the native, by whom it is cultivated, has not obtained a sufficient number of plants to extend his experiments, Mr. Elphinston having given up his garden in 1844-45. The jail arrow-root sells from 4½ to nearly 4½ annas per lb.; whilst the West India arrow-root sells at 5 annas 4 pice per lb., or 3 lb. per rupee.

Arrow-root flour, from Calicut.

Sago meal (*Phœnix*), species of, from Cuttack.

Pearl sago; sago flour; sago cakes; pith of sago palm. Principal food of natives of Malacca, also made by them into soup.

Tapioca, from Calcutta and Rutnagherry.

Tapioca (*Rutnagherry*). Tapioca was also introduced into the gardens at this station by Mr. Elphinston in 1840, and the total quantity of land sown with slips of

this plant, amounts to about three beeghas. This cultivation is carried on in a garden attached to the jail, and on some land belonging to a native. This individual prepares about 15 maunds yearly, and 3 maunds are made in the jail, in all 18 maunds or 504 lbs. The jail tapioca sells at 10 rupees per maund; whilst that prepared by the native realises from 12 to 15 rupees per maund, as he disposes of it by retail sale at Bombay.

Tapioca and arrow-root flour is prepared by rasping the roots down to a pulp, which is steeped in clear water, after which the fibre is separated by the hand, the fine flour being allowed to settle at the bottom; the fibrous part or stuff is eaten by cattle, and seems to be very nutritious. The root may be roasted and eaten as yams. The flour, prepared as above described, becomes purer in proportion to the number of times it is washed in water, which has to be changed twice a day to prevent its souring or becoming acid, which injures the flavour of the flour.

Of the quantity of flour, both tapioca and arrow-root, one-third is consumed at the station, and the remaining two-thirds are sent to parties applying for it from Bombay. The native manufacturer retails his own produce at Bombay, as he makes a greater gain than by wholesale to the chemists and druggists. I have not heard of any Rutnagherry tapioca or arrow-root being exported to England or any other European country."

Flour of *Nelumbium* seeds (*Nelumbium speciosum*), from Cuttack.

Salep, Salep misree, obtained in Calcutta, from the north-west of India.

Plantain meal, from Madras.

Agar Agar.—1st quality obtained from Malacca. A sort of edible sea-weed, which grows on the rocks that are covered by the tide. It is much used for making a kind of jelly, which is highly esteemed both by Europeans and natives for the delicacy of its flavour. From Singapore Committee.

Ditto.—2nd quality, obtained from Macassar (Celebes). It is an edible sea-weed, collected on the submerged banks in the neighbourhood of Macassar by the Bajow Laut or sea Gipsies, for exportation to China. Ditto.

Ditto.—Obtained from Singapore, and collected on the reefs and submerged ledges in the vicinity of Singapore, and constitutes the bulk of the cargoes of the Chinese junks on their return voyage. It is much used there as a size for stiffening silks and making jellies. Ditto.

#### (G.) Sugar Series.

[The increased growth and manufacture of sugar in India have often attracted attention in Europe, in order to ascertain whether it could be supplied in such quantities and at such prices as to contend with slave sugar in home markets. From the larger capital which has been invested in the manufacture of sugar by Europeans, and from the increased exports of sugar from India, it would appear that capitalists are of opinion that this can be done. But the great demand there is in India for sugar for home consumption, and the rapidity with which prices are run up in the interior whenever an increased demand occurs from Europe, have prevented the much larger exports that might have taken place, or the expected profits being realized on its arrival in this country. One thing is very evident, and that is, the great improvement which has taken place in the manufacture of sugar by the different European Companies which have been established in India, as displayed in the specimens sent for exhibition from Cossipore and Ganjam, from the Deccan, and from Shajehanpore. The sugar-candy from Bickaneer is interesting, because it is sent from a district where the sugar is not produced; in fact, from a desert-like country where the sugar-cane cannot be grown. But sugar in a raw state is imported from the plains, and after being purified and crystallized is sent back again and brings a good price,

as it is valued both by Europeans and by natives of rank. These also consume a good deal of the sugar-candy of China.

Among the sugars another very interesting feature is, the variety of plants from which sugar is obtained, and of which specimens have been sent. Though the sugar-cane yields by far the largest quantity, yet in some districts the wild-date palm (*Phoenix sylvestris*) is the principal source, as in some of the districts of Bengal. In the Madras Presidency much sugar is obtained from the Palmyra palm (*Borassus flabelliformis*), and in the straits from the gomuti or sago palm (*Arenga saccharifera*). A specimen has also been sent of sugar obtained from the Neepah, a plant allied to the *Pandanea*, or screw pine, and which lines the shores of many parts of the Malayan peninsula, as well as of many of the Eastern islands. The Bassias, which have been mentioned as the sources of a distilled spirit, also yield sugar, though this is more frequently fermented than separated from the flowers in the form of sugar.

Following the sugars, a very good specimen of manna from the tamarisk is displayed, having been sent to the author of this note by Dr. Stocks from Scinde.]

Loaves of sugar manufactured after European and native methods, from Shahjehanpore, in district of Rohilkund.

Sugar (*Saccharum officinale*), from Aska, in Ganjam.

Sugar from the Decan.

Indigenous Sugar. "Made by the simple process described in the 'Transactions of the Bombay Agricultural Society of 1839.' Could be afforded at 7 to 8 rupees per maund of 84 lbs."—Bombay.

Sugar from sugar factory at Cossipore.

Sugar candy; native crystallized sugar candy; from Bickaneer. Rajah of Bickaneer.

Sugar made from the juice of spathe of the Gommuti palm, from Java.

Date sugar (*Phoenix sylvestris*), from Dacca.

Neepah sugar (*Nipa fruticans*), produced in Burman and Malayan peninsula.

Sugar of Muohwa flowers, or those of the butter tree (*Bassia butyracea*), from Kémaon.

Sugar, manufactured in Dutch high-pressure vacuum pans, and by a new process not generally known, made in common open battery, from Sourabaya, Java.

Sugar, manufactured in low-pressure vacuum pans, from Probolingo, Java.

Yestinado, substitute for liquorice root (*Abrus precatorius*), from Tanna.

Tamarisk manna from Scinde.—Dr. Stocks.

#### CLASS IV.

##### VEGETABLE SUBSTANCES USED IN MANUFACTURES.

[The natural products of this class are separated from the last because they are employed chiefly in the arts and manufactures, or as medicines; yet some of them are also used as articles of diet—as, for instance, many of the fatty oils and gum in some parts of Africa.

##### Gums, Resins, and Gum-resins.

In mercantile language, the word *gum* indicates very dissimilar substances—that is, either a *gum*, a *resin*, or a *gum-resin*. But the word *gum* signifies a vegetable exudation which is soluble in water, and *resin* one that is soluble in spirit, while *gum-resin* indicates those which contain both gum and resin. Without chemical analysis, it is not always easy to say to which of these groups a new and unknown substance belongs.

As Africa produces and exports the largest quantity of the gum of commerce, we might expect that some of it would reach India with other African products from the East, or Somali Coast, through Aden and Arabia. Some

fine specimens of gum have been sent from Aden, produced probably by different species of acacia which abound in the arid plains of Africa. In India a good deal of gum is yielded by *Acacia arabica*, and by other species of the same genus. Gum is also yielded by species of other genera, as *Feronia*, *Melia*, *Mimusops*, and a substitute for tragacanth by species of *Cochlospermum* and of *Sterculia*. It would be extremely interesting and important, as showing their application to different purposes in the arts, to ascertain their exact composition, and the means by which the less pure kinds of gums might be purified. Some of these, though not purely such, are more useful for their astringent properties, as those of *Butea*, *Bombax*, *Moringa*, and *Diospyros*. Among the resins, that called *Soondroos*, and by European merchants, *Asimi*, and *Copal*, is imported into this country from India. It is the produce of Africa, and forms one of the imports into Aden. The tree yielding it is unknown. This resin has sometimes been thought to be the produce of *Vateria indica*; but this yields a resin which exudes in the liquid state, and is known by the name of *Piney varnish*. Some fine specimens have been sent in bottles, and are in a semi-fluid state. Others are in a dry state, and form a pure resin. A greenish-coloured resin from Coorg, of which the source is unknown, also appears very pure, and might, like the former, be employed for making varnishes. The most abundant of the resins is that of the saul tree, *Shorea robusta*, which is itself an invaluable timber tree. It is used for all the purposes of resin, and for paying the bottoms of boats in India. It is known by the names of *Dammar*, *ral* and *dhoona*. The name *Dammar* signifies resin in general, but is most frequently applied to the resin of a pine, the *Dammara australis*, of which specimens have been sent from Malacca. Among the fragrant resins, the olibanum may be mentioned, which is used in India as incense. That produced in India is obtained from *Boswellia thurifera*, while that imported from Africa is the produce of probably another species of *Boswellia*. Myrrh is imported from Africa, and *assa-fœtida*, *ammoniacum*, &c., from the Persian Gulf. *Bdelium*, an inferior kind of myrrh, has been shown by Dr. Stocks to be produced by a species of *Balsamodendron*. Dr. Nicholson has discovered it in Kattywar, and it is probably produced in other parts of India. Benzoin is a well-known product of the island of Sumatra; but a kind is stated to be produced in Malabar, of which the source has not been ascertained. The storax sent by the Rajah of Kotah has probably been imported into India.

The oleo-resins have not attracted that attention which they deserve: the kind called *Gurjun*, obtained from a species of *Dipterocarpus*, yields an oleo-resin very similar to balsam copaiba.

##### Caoutchouc and Gutta Percha.

Among these are some original specimens; as the caoutchouc sent from Assam to Mr. Swinton, and the specimens collected by Capt. Vetch, which are very pure, have little colour, and retain all their original properties. New sources of this useful substance are indicated in the specimens from Singapore.

The specimens of gutta percha are interesting, as being some of the original ones sent by Dr. Montgomery to the India House, and from whence specimens were distributed to numerous experimentalists. Professor Solly employed some of them in the analysis which he made on the original introduction of this substance. These are sent by Colonel Bonner, of the East India House.]

## (A.) Gum and Resin Series.

Gum Babool (*Acacia arabica*), from Bengal.  
 Gum Arabic, from Aden (imported from Somali coast);  
 Kheirgum of *Acacia catechu*, from Rajpootanah; Jumma jegota (*Acacia leucophlœa*), from Vizagapatam; Babool taca, keekur gond (*Acacia farnesiana*), from Bengal.  
 Gum gattie, Babul tree, from interior of Bombay.  
 Gum Gattie is a gum produced in the Concan, Guzerat, and Dekkan, from the common "babool" or acacia arabica, very similar to gum arabic. Re-exported chiefly to Great Britain: annual importation 360,867 lbs.  
 Gum from margosa tree (*Melia azadirachta*), from Madura, Tinnivelly, and Palamcottah.  
 Gum of wood apple tree (*Feronia elephantum*); Pagada jegota (*Mimusops elengi*); Mallaga jegota (*Moringa pterygosperma*), from Vizagapatam; Ballec gond (*Sterculia urens*), or spurious tragacanth.  
 Spurious Tragacanth. Ballec gond, the gum of the *Sterculia urens*. This comes from the neighbourhood of Tanna; it is all that the committee have been able to obtain, and was taken from a private collection. It is not sold in the bazaar of Bombay; it has been sent, at the request of the Central Committee at Calcutta.  
 Kuteera, or spurious Tragacanth (*Cochlospermum gossypium*), from Meerut.  
 Gums, small collection in bottles, from Sarawak, Borneo.  
 Resin of saul tree (*Shorea robusta*), from Bengal and Bhagulpore; Guggilam (*Vatica tumbuggaia*), from Canara and Vizagapatam.  
 Copal, Soondroos—sent from Bombay.  
 It is imported here from the Persian and Arabian gulfs, and re-exported chiefly to Europe.  
 Piney varnish (*Vateria indica*), from Malabar and Canara.  
 Piney resin of dhoop tree (*Vateria indica*), from Canara.  
 Resin of Tendoo, kind of ebony (*Diospyros*), from Rajpootanah.  
 Meka sta-Dhoona, from Assam.  
 Thengancet resin, for paying bottoms of ships, from Arracan.  
 Thenatthu, coating to paper umbrellas and varnish, for manufacture of papier maché; Thetsee (*Melanorrhœa vitata*), used as lacquer, from Arracan.  
 Black varnish, from Assam. Resin of (*Odina wodier*), from Calcutta and from Meerut.  
 Nareeda jegota (*Eugenia jamboe*), from Vizagapatam.  
 Pitch of gaup tree (*Embryopteris glutinifera*), from Bhagulpore.  
 Different sorts of dhoop, a perfume, from Nepal, Bhotan.  
 Olibanum, saleh gond, Loban (*Boswellia thurifera*), from Chota Nagpore.  
 Dikamali gum (*Gardenia lucida*), very effective in keeping vermin from wounds, from the interior of Bombay. It exudes in amber-coloured transparent drops about the ends of the shoots, and from thence is collected.  
 Jelladi pulu (*Calotropis gigantea*), from Vizagapatam.  
 Resin, Dammar, from Malacca, Java, and Sumatra.  
 Resins and guttas, great variety, from Sarawak, Borneo.  
 Fir turpentine (*Pinus longifolia*), from Cheera Poonjee hills, Daeca. Resin, from Ullwar.  
 Balsam storax, in silver box, from Rajpootanah.  
 Benzoin (*Styrax benzoin*), from Sumatra.  
 Benzoin, from Malabar and Canara.  
 Gum resins, as assafoetida, ammoniac, &c., imported into Bombay from the Persian Gulf.  
 Gum Ammoniac is imported into Bombay from Persia and Arabia, and chiefly re-exported to Great Britain. Annual importation, 132,296 lbs.  
 Gum Gojar. Of this gum no account has been obtained. It was sent in anticipation that an account of it was forthcoming, but none has reached the committee.  
 Assafoetida. This gum is imported from the Persian Gulf and Sindh, and chiefly re-exported to various parts of India. Annual importation, 324,920 lbs.  
 Bdellium, a kind of myrrh, from Aden.  
 Bdellium, from Bombay. Two kinds of this gum have been discovered, one, which is thick like wax, and the

other the common dark sort. It is found principally in Persia, Arabia, Cutch, and Sindh, and is chiefly re-exported to Calcutta and China: it is used in medicine. Average annual importation, 177,887 lbs.

Bdellium, from Cutch. This is collected in Cutch; but probably the greater part imported there is from Arabia, and the Somali coast of Africa.

Nepalapi pulu (*Jatropha Curcas*); Mersakslie (*Amryris commiphora*), from Vizagapatam and Ganjam.

Olibanum, from Aden, from Somali coast.

Myrrh, Herabole and Bysabole.

Dragons-blood, from Aden, imported from Sumali coast.

Heraduceun (*Bombay*). "The produce of a large species of ratan, growing on the north and north-east coasts of Sumatra and in some parts of Borneo, and imported in small quantities to Bombay. It is either in oval or round drops wrapped up in flag-leaves, or in large and generally more impure masses composed of smaller tears. It is internally and externally of a dusky red colour, and when powdered it should become of a bright crimson; if it be black, it is worth very little. It is somewhat transparent, and has little or no smell or taste; what it has of the latter is resinous and astringent. Dragons-blood is far preferable to that in cakes, the latter being more friable and less compact, resinous, and pure, than the former. Being a costly article, it is very apt to be adulterated; most of its alloys dissolve like gum in water, or crackle in the fire without proving inflammable; whereas the genuine dragons'-blood readily melts and catches flame, and is scarcely acted on by watery liquors. It is often confounded with gum kino; but a little observation would easily discover the difference. No imports of it took place in 1847-48 or 48-49. In 1849-50, however, 586 lbs. were imported, and re-exported to various places in India.

Gamboge. It is imported from Singapore, China, and the Straits of Malacca, and is chiefly re-exported to Great Britain. Annual importation, 26,804 lbs.

Cutteemundoo, or Kattimundoo gum (*Euphorbia nereifolia*). This gum is described as being useful in cementing iron with other substances, the blade and handle of a knife for instance.

India-rubber from *Ficus elastica*, collected by Captain Veitch, &c., in Assam.

India rubber, Gum caoutchouc, from Lampung, Sumatra; Manjegatu (*Ficus indica*), Atti jegota (*Ficus racemosa*), from Vizagapatam; Camboley (*Morus indica*), from Paulghat.

Gutta-percha. Some of the original specimens sent by Dr. Montgomery to the India House.

Gutta percha (*Isonandra gutta*), from Johore, Malay Peninsula.

Gutta trap used for birdlime (*Artocarpus*), from Singapore.

MACINTOSH & Co. Cambridge St. Manchester, and 73 Aldermanbury, London—Importers, Manufacturers, and Patentees.

1—4 Specimens of India-rubber, from Assam.

5—7 Specimens of India-rubber, in process of cleaning, in masticated block, and in thin cut sheets.

8—10 Specimens of India-rubber in laid sheets, in colours, and in solution.

11 Specimens of India-rubber, laid on various fabrics as material for making waterproof articles.

12 Specimens of India-rubber embossings for making up various fancy articles.

13 Specimens of India-rubber thread for weaving into various elastic articles.

14 Specimens of India-rubber thread for ladies' knitting and crochet work.

Birdlime, bor attock, from Assam.

Varieties of raw caoutchouc and its preparations for various manufactures, consisting of the wood, the coagulated juice, of the caoutchouc from Assam; raw caoutchouc from Assam, Singapore (*Urceola elastica*, the Jintawan of the Malays), from Para, Jamaica, &c.

Caoutchouc in the processes of being cleaned, corru-



gated blocks, sheets cut from blocks, and also in spread sheets.

Caoutchouc vulcanized in a sulphur bath; sulphurized by mechanical mixture; ditto vulcanized; blocks vulcanized; sheets vulcanized for various purposes; thread ditto for elastic fabrics; sheets coloured and vulcanized; embossed and modelled caoutchouc vulcanized; cloth for waterproof clothing and articles of various fabrics; double and single textures vulcanized; sheets converted, coloured, converted, and vuleo-converted; dough for spreading into sheets, and varnishes prepared of caoutchouc, &c.

The process of treating caoutchouc with sulphur, by means of heat, since called vulcanizing, was discovered by Mr. Thomas Hancock, and patented by him November 23, 1843. The remarkable changes effected by this treatment of caoutchouc are:—1st. Its resistance to the effects of climatic temperature, neither being stiffened by cold nor injured by heat. 2ndly. It resists the destructive action of the common solvents of caoutchouc, merely absorbing them as a sponge does water, but without being dissolved in essential oils. 3rdly. Its greatly increased and permanent elasticity.

These valuable properties, imparted by vulcanizing, have opened to the uses of caoutchouc, previously very limited, many important and extensive applications to manufactures and engineering.

#### (C.) Oil Series.

[This series includes both *volatile* and *fatty*, as well as *solid* oils, or vegetable butters and tallows, as they are also called. India is rich in all the three groups of oils; and among them are some which are little known in Europe, though they are well calculated from their good qualities, abundance, and cheapness, to become valuable as articles of commerce, and from their fitness for candle and soap making. Among the volatile oils are the famed *atr*, *utter*, or *otto* of roses, and with it some fine rose-water from Mr. Godfrey, of Ghazee-pore. *Grass oil*, often called, though erroneously, *Oil of Spikenard*, has been sent from several parts of Central India, as well as from Sumatra, under the name of *Siri*, or *Lemon-grass oil*. It is probable that they are all produced by species of the old genus *Andropogon*: though, without authentic specimens of the plants from each place, it is not possible to identify these correctly. It is probable that one of them is the sweet cane, or sweet *calamus* of Scripture. Sandal-wood oil and the essence of *Ketgee* or *Keora* (*Pandanus odoratissimus*), are highly esteemed in the East, as well as that prepared from the *Uggur*, or *Agila* and *Ahila*, the aloes-wood of Scripture. With all these may be enumerated several essential oils from the Moluccas, as well as scents from Ghazee-pore. The latter are solutions of the scents in the finer fixed oils.

With these volatile oils may be noticed the camphor of Sumatra, often called *Barus camphor*, which has been forwarded from Borneo, *vid* Singapore. This kind, found in a solid state in small pieces within the wood of *Dryobalanops camphora*, is so highly valued by the Chinese, as to be bought by them at a much higher price than they sell their own purified camphor for, though Europeans cannot perceive that it is in any way inferior.

This is probably as suitable a place as any for noting the *Kayu Garu*, or *Agala* wood, *Lignum aloes*, and *Calambac* wood of commerce, which is produced in Sumatra and Malacca, as also in Silhet. In the last, by *Aquilaria agallocha* of Roxburgh, figured by the author in his "Illustrations of Himalayan Botany." That of Malacca may be produced by the same species; that of Siam is produced by the *Aloexylum* of Loureiro. It is highly esteemed in China and in Turkey. In the former it is reduced to a

fine powder, mixed with a gummy substance, and laid over small slips of wood, which are burned in their temples to give out a fragrant odour.

The true Spikenard, or *Nardos*, compared by the Arabs to the tail of an ermine, is arranged here with aloes-wood, as it also forms a scent highly esteemed in India and other Eastern countries.]

#### Volatile Oils.

*Otto* or *atr* of roses (*Rosa glandiflora*), from Ghazee-pore.

Oil or *atr* of roses, from Rajpootana.—Rajah of Kotah. Rose-water, by Mr. Godfrey, from Ghazee-pore.

Grass oil (*Andropogon Martini*; *Schannanthus? muricatus*: *A. calamus aromaticus*, Royle), from Malwa.

Grass oil, with the grass and seed, from which it is extracted, contributed by R. C. Hamilton, Esq., from Malwa.

Lemon grass or *siri* oil, from Sumatra.

Oil of cloves (*Oleum caryophylli*), from Madras.

Cajaputi oil, *Kaya pateh*, from Malacca.

Sandal-wood oil, *Chendana tel*, *Sundana yennai* (*Santalum album*), from Mangalore and Canara.

*Ketgee* oil (*Pandanus odoratissimus*), from Rajpootana.

*Kitichee*; *Uttur khera*, green-pined screw pine, white flowered; *Uttur khetkee*, green-pined screw pine, yellow flowered (*Pandanus odoratissimus*), from Rajpootana.

*Uggur*, or oil of aloes-wood, from Nepal.

Compound oil of aloes-wood, from Rajpootana.

Essential oil of aloes-wood, from Ghazee-pore.

Saffron oil, from Rajah of Kotah, Rajpootana.

Scents of *chumpa*, *jasmine*, &c. (*Michelia champaca*,

*Jasminum grandiflorum*, and *J. sambac*), from a native perfumer at Ghazee-pore.

Essential oils and scents, from the Moluccas.

Camphor, commonly called *Barus camphor*, from Borneo, much esteemed in China, erroneously said to be used to flavour the Chinese camphor.

*Kayu garu*, *Uggur*, *Agila*, *Eagle* or *aloes wood*, from Sumatra and Malacca.

*Spikenard*, *balchur* and *jatamansi*, *Nardostachys jatamansi*, both used for making scents. Himalayas.

#### Fatty Oils.

[These are very numerous in India, being employed by the natives both as articles of diet, for anointing their bodies, and for burning in oil-lamps. Some of them are cultivated by the agriculturist, as the poppy, linseed, sesamum, ramtil, or *Guizotia*, ground-nut, and the different kinds of mustard-like plants, so also castor-oil and safflower. The shrubby *Jatropha curcas* is grown in hedges, &c. Oil is also expressed from the seeds of large trees, as the *Cocoa-nut*, the *Kurrunj*, *Chironjee*, *Neem*, *Margosa*, *Poontree*, and many others, of which the peculiar properties are not well known, as fitted for different purposes, but all can be obtained in large quantities.

But the solid oils, or vegetable butters, such as the *cocoa-nut* in temperate climates, are of great interest, and several have been sent from India. Of these, that of the *Bassia butyracea*, from the neighbourhood of Almora, in the Himalayas, has several times been written about, but it occurs only in small quantities; that of the *Bassia latifolia*, or *Muohwa* tree, has been analysed by Mr. Hardwick, who has sent specimens of the *Bassic* acid, which he obtained from this vegetable fat, which closely resembles the solid oil of another species of *Bassia*, that is, *B. longifolia*, which is common in the Madras, as *B. latifolia* is in the Bengal, Presidency. This has already been mentioned as secreting sugar in its flowers, which, being fermented, yields, by distillation, the common arrack of the country. From the great abundance of both species, a plentiful supply of the oil might be obtained, and at a cheap rate. The natives could supply their own

wants with the oils from the annual plants. Another solid oil, of which the tree (*Vateria indica*) has already been mentioned as yielding piney varnish, is still more substantial in nature, and is commonly called vegetable tallow. It was examined some years since by Professor E. Solly, and its fitness for candle-making clearly demonstrated. Though the tree is abundant, it is doubtful whether the oil which is expressed from the seeds can be had in any considerable quantity—probably from the want of a regular demand. In addition to them, a vegetable tallow has been sent in a gourd from Sarawak, in Borneo, and another in bamboos from Malacca, though the trees yielding them are not mentioned. They may be the same as the *Stillingia sebifera*, which yields the vegetable tallow of China, or they may be yielded by species of *Bassia* or of *Pternandra*. One of them may be the *Minia batta*, or stone oil, which was introduced from Borneo some years since.

But without specimens of the plants or trees yielding the several oils, it is impossible to identify them when the number is so great of trees yielding not only oils but solid fats. Mr. Low mentions that several species of Dipterocarpus yield a fatty oil, which having been sent to England, has been extensively used under the name of vegetable tallow and vegetable wax. The seeds of one of the species, called *Meneabang pinang*, yield a very large proportion of oil, which, on being allowed to cool, takes the consistence of sperm. This has been used at Manilla in the manufacture of candles. In Borneo it is called by the natives indifferently "*Miniak meneabang*," or "*Miniak takawan*." Another oil, expressed from the seed of a tree called *katiow*, is called "*Miniak katiow*." It burns in lamps with a bright and clear flame, and emits an agreeable odour. The *Miniak kapayang* is another oil held in esteem for cooking by the natives of Borneo. It is yielded by the tree, called *Panguim edule* by botanists. Mr. Low mentions, moreover, that the seeds of many of the forest trees, as the *niale* or gutta percha of the Malay Peninsula, produce edible oils of fine qualities. He also refers to wood oils, called "*Miniak kruing*," which are obtained by cutting a large hole in the tree, into which fire being placed, the oil exudes. The wood oil, or *gurjun* of Silet, is obtained in something of a similar manner from different species of Dipterocarpus.

The solid oils or vegetable fats sent from Bombay, under the names of *Kokum* and of *Kikuel* oil, the first yielded by the seeds of *Garcinia purpurea*, and the other by the seeds of *Salvadora persica*, are remarkable for their solid consistence, and may probably be applicable to a variety of useful purposes.

The collection of oils is probably the largest in number, and at the same time one of the most valuable, that has ever been sent to this country. Though many have contributed in forming the collection, the Commissary-General of Madras, Captain Horsley, of Palamcattah, and T. Bishop, Esq., of Tanjore, may be mentioned as each sending several varieties of oils.

A specimen of vegetable wax is interesting. It has been sent from Singapore, and is said to be obtained from the island of Billitor—yielded, perhaps, by one of the above-mentioned species of Dipterocarpus.]

Linseed and linsced oil, tisseel tel, from Moorshedabad.  
Linseed, grown in the interior of Bombay.  
Sesamum oil (*Sesamum orientale*), (black and white), from Moorshedabad.  
Gingely seed (*Sesamum orientale*), from Vizagapatam and Ganjam.

Tillee oil and seed (*Sesamum*), from Gwalior.

Gingely oil, Manchy noonæ, til ke tel, hind, nullenai, tamool (*Sesamum orientale*), grown in all parts of India, Vizianagrum Zemindary, Tanjore; gingely seeds, from Hydrabad.

A kind of mustard (*Sinapis toria*), from Ghazee-pore and Meerut. Mustard oil (*Sinapis glauca*), from Calcutta.

Annaloo noonæ (*Sinapis nigra*); Rai ke tel, hind; Kadrogoo yennai, tam, from Tanjore.

Castor-oil seed, large and small, from Bellary.

Castor-oil (*Ricinus communis*), from Madura and Tinnively; Chitta anmethum; arindia; chittamenachoo yennai. Cold-drawn castor-oil, arandee ka tel, from Tanjore.

Jungle lamp oil, Adivia aumedum (*Ricinus communis*), from Tanjore. Erandee; katoo aumanakoo yennai. Castor oil; miniak jarah oil, from Java.

Jatropha oil. The uses of this oil from the *Jatropha curcas* as a drying oil have as yet hardly been tried, but it leaves a fine varnish-like polish on drying. As a medicinal oil for external applications and external use it may be found valuable. The family to which the plant belongs would indicate caution in its use as regards the human body. The plant grows extensively over the Bombay Presidency. The oil could be supplied at about a rupee for seven pints.

Bhoga Bhirinda oil (*Jatropha curcas*), from Beerbhoom. Poppy seeds and poppy-seed oil, Gasagesa noonæ (*Papaver somniferum*), from Tanjore and Calcutta.

Oil of seed of *Argemone mexicana*, Calcutta.

Koosum oil (*Carthamus tinctorius*); Safflower seeds (*Carthamus tinctorius*); oil and seed of saul tree (*Shorea robusta*), from South-west Frontier and Rajpootana.

Cheeronjee berries and seeds (*Chironjia sapida*, now *Buchanania latifolia*), from Rajpootana and Moorshedabad.

Valuse nuno (*Guizotia abyssinica*), from Vizagapatam.

Ram til (*Guizotia oleifera*), from Calcutta, Vizagapatam, Ganjam.

Valisaloo oil, Valisaloo noonæ (*Guizotia oleifera*), from Vizianagrum Zemindary, Vizagapatam, and Ganjam.

Poonseed oil (*Calophyllum*), from Madura, Tinnively, and Palamcottah.

Pinnacottay oil, Ponna noonæ (*Calophyllum inophyllum*), from Tanjore.

Oondee oil (*Calophyllum inophyllum*), Tannah.

Oondee oil. Expressed from the nut of the *Calophyllum inophyllum*. It is used as a stimulant in medicine externally and internally.

Almond oil, Badum noonæ, Badoomai yennai (*Amygdalus communis*, probably *Terminalia catappa*, which is called the almond tree in many parts of India), from Tanjore.

Poonga oil, Kanuga noonæ; Kaju ka tel; Poongar yennai, from Tanjore.

Caju apple oil, Moontha maunnerly noonæ (*Anacardium occidentale*); Kajoo ka tel; moonthery yennai, from Tanjore.

Neem oil; expressed oil from margosa berries (*Melia azadirachta*); Margosa seeds, from Bellary.

Neem oil, Vapa noonæ (*Melia azadirachta*); Neem vappa yennai, produced all over India.

Margoosa oil, Vapa noonæ (*Melia azadirachta*); neem ka tel, vappa yennai, from Tanjore.

Katchung oil, from ground nut (*Arachis hypogæa*), from Java.

Ground nut oil. Owing to its thinness and freedom from rancidity, containing little stearine, it is, Dr. Gibson thinks, used in some countries for watches and other delicate machinery. As a salad oil and a cooking oil in India it is, from its freshness, superior to olive oil. Quantities of it are annually supplied to the medical stores at Bombay. It could be supplied at five rupees per 28 lbs.; without allowing profit, at two annas and ten pies per pint.

Kurrunj oil, from Tannah. Expressed from the nut of *Galedupa indica*, now the *Pongamia glabra*. It is used

externally as a stimulating embrocation, and given internally to horses with colic spasms.

Kanagu none (*Pongamia glabra*), from Vizagapatam.  
Country walnut, Dessy akhroot (*Aleurites triloba*);  
Simbole (*Bergera kœnigii*).

Hingun or Hingota (*Balanites ægyptiaca*), oil of  
*Moringa pterygosperma*.

Mooneela grain oil, Varoo samgaloo noonæ (*Dolichos biflorus*).

Nilackadelai yennai, from Tanjore.

#### Solid Oils.

Cocoa-nut oil (*Cocos nucifera*), from Calcutta, Malabar, Madura, Tinnivelly, and Sarawak.

Treble refined castor oil, from Messrs. SAINTE of Cossipore, near Calcutta; Tonkaya noonæ (*Cocos nucifera*); Narel; Thenga yennai, from Madras.

Vegetable butter or ghee (*Bassia butyracea*), from Kâmaon.

Muohwa oil (*Bassia latifolia*) from Moorshedabad.

Epie oil, Ippa noonæ (*Bassia latifolia*) Canara; Illoopo zennai (*Bassia latifolia*), from Mangalore.

Elloopoo oil (*Bassia longifolia*) from Madura and Tinnivelly; Illoopoo oil, Ippa noonæ, expressed from seeds of *Bassia longifolia*, India; Illoopoo yennai, from Tanjore.

Vegetable tallow, or Piney tallow, from fruit of Dhoop tree (*Vateria indica*), from Malabar, Canara, and Mangalore.

Kokum oil (*Garcinia purpurea*). Kokum oil is obtained from the dried fruit of the *Garcinia purpurea*. It is a concrete oil. It is used as an article of food; also as a medicine externally in eruptive complaints, and internally in affections of the bowels. It is also said to be exported to England for making pomatum, as a substitute for bears' grease.

Kikuel oil. The produce of the solid part of the seed of *Salvadora persica*, peeloo. The pulpy part of the seed is watery, but all parts of the tree have the strong mustard-like flavour. The roots of the tree have strong medicinal power. It is common in Palestine. It is imported here from Guzerat, and is chiefly consumed in Bombay. Annual importation, 3,843 lbs. The tree is supposed to be the mustard-seed tree of Scripture.

Vegetable tallow, from Malacca, and Sarawak, Borneo.

Vegetable wax, Gutta podoh, from Billiton.

Coorookoo oil, from Madura and Tinnivelly.

Koodree oil and Kaissoon oil, from Chota Nagpore.

Shemmandu oil, from Palamcottah.

Khatzum (*Vernonia anthelmintica* ?), from Bombay.

#### (D.) Dyes and Colours.

[The natives of India being celebrated for the variety as well as for the brilliancy of the colours which they employ, this group may be expected to be rich in the number of raw materials. It is so, to a certain extent; but we are unable to say anything respecting many of them, as their exact applications are unknown. There is very little doubt that a careful investigation of their properties would amply repay any scientific dyer who would direct his attention to them. Some of these dyes are, no doubt, well known; as indigo, of which fine specimens have been sent by D. Jardine, Esq., from Jessore, and others from Cuddapah. One kind, sent by Mr. Fischer, is interesting, as being the produce of the leaves of a tree (*Wrightia tinctoria*), which differs entirely from the common indigo plant (*Indigofera tinctoria*). Turmeric, safflower, sapan, and myrobolans, and others, are well known.

The different kinds of madder root require to be carefully distinguished with respect to their properties—as, for instance, the munjeet of different parts of India. The *al* and *ach*, as yielded by different species of *Morinda* in Central India, and employed in dyeing the permanent deep

red calico called *khurwa*, which is much worn by water-carriers. Both these are distinct from the *chay* root (*Oldenlandia umbellata*) of the Coromandel Coast. The mangkuda root has been sent from Malacca, Java, and Celebes, to which the old name of the chay root, *Morinda umbellata*, is applied in the lists from Singapore. The different lichens from the Himalayas and Scinde, the roots and herbs, flowers and fruits, from Arrakan and the Indian islands, as well as from different parts of India, all require careful investigation.]

Specimens of indigo, from Babacully, in Jessore, Messrs. M'Nair and Co., and from Joradah factory.—Sent by D. Jardine, Esq., of Calcutta.

Indigo (*Indigofera tinctoria*), from Hart and Simpson's factory, from Arbuthnot's factory, and from Cuddapah market, from Cuddapah and Madras.

Best indigo and Kotah indigo-seed, from Kotah.

Indigo, and other dyes, Rao of Cutch. Indigo is chiefly grown for home consumption.

Pala indigo (*Wrightia tinctoria*), Mr. Fischer, from Salem.

Gaju gum, used in dyeing, from Celebes.

Madder, from Assam, Calcutta, and Aden.

Lichens, from Himalayas and from Sindh.

Mangrove bark, Kaboung, yields chocolate dye, from Arracan.

Myrica bark, from Himalayas.

Bark and wood, Ting nyet, dark purple dye, from Arracan.

Sagah bark, and Samak bark, from Singapore.

Lopisip bark, from Celebes.

Purple flowers used as a dye in Arracan:—

Sapan wood (*Casalpinia sapan*), from Bengal.

Bulu wood, Bunchong; Mangkudu root? (*Morinda umbellata*) red dyes from Celebes and Java.

Safflower, Kasoomba (*Carthamus tinctorius*) from Assam and Dacca.

Tisso flowers, light red dye (*Butea frondosa*) from Tanna and Bengal. They are used for dyeing a light red colour, a favourite colour for turbans.

Annotto (*Bixa orellana*), from Assam.

Hursinghar flowers, yellow dye (*Nyctanthes arbor tristis*) Rajpootana and Cuttack.

Abutilon striatum? from Assam.

Haradah berry, from Hill tracts of Orissa.

Myrobolans (*Terminalia citrina* and *Terminalia bellerica*), from Moorshedabad, Cuttack and Assam.

Marking nut (*Semecarpus anacardium*), from Assam.

Reroo, hair of fruit of (*Rottlera tinctoria*), from Assam.

Turmeric (*Curcuma longa*), from Assam.

Seeds, root, and powder, prepared for colouring (*Morinda citrifolia*), from Rajpootana.

Root of Mangkudu (*Morinda umbellata*) from Malacca.

Sapan-wood root (*Casalpinia sapan*), from Java and Philippine Islands.

Chay root (*Oldenlandia umbellata*), from Tinnivelly, Palamcottah.

Al or ach root (*Morinda tinctoria*), from Rajpootana.

Nutgalls, Danghy hurritocheer, and Assokat, from Assam.

Reroo (purple dye), Thit nan weng (chocolate dye), Krit tel and Thee dan (red dye), from Arracan. Kayu kadrang (yellow dye), from Malacca.

Woody (*Calysacion longifolium*), from Bombay. Flowers exported to Bengal for dyeing silk.

Avaraiputta, Saracundraputtah, from Palamcottah.

Usburgh and Ukkul beer (*Datisca cannabina*), yellow dye, from Lahore.

#### (E.) Tanning Substances.

[The same observation may be made respecting tanning substances that we have made respecting the dyes, that is, judging from the results, the raw materials employed must be possessed of the best qualities as astringents. Some of these are well known as the dif-

ferent kinds of Myrobolans, but which are chiefly employed in dyeing. The *Emblie myrobolans*, which is more astringent, is, however, the product of a very different tree (*Emblie officinalis*) from the others. Gall-nuts are imported, by the Persian Gulf, into India from the same regions which supply Europe. Tamarisk galls are used in some places where they are abundant, as is pomegranate rind. The divi divi is being grown in Bengal, and produced of excellent quality; but a new species of *Casalpinia*, called Teree, from Chittagong, is found to be useful for the same purposes. The bark of *Acacia arabica* is the most frequently employed in most parts of India, but that of *Cassia auriculata* in the Peninsula. Several others require examination. The acacia is abundant in the forests of Scinde, as is the mangrove along the shores of the Indus. Dr. Stocks has proposed the preparation of extracts from these barks, as was some years since done by Dr. Gibson, in order to save the expense of freight for bulky barks, and enable them to come into the market with catechu, terra japonica, and gambir, which are already so well known and extensively employed, and come from as distant parts of the Indian empire. Kino also might be more extensively supplied, as the tree producing it has been discovered in many of the forests of India. The kino of *Butea frondosa* might be used for the same purposes as it is possessed of similar properties.]

Aonla berries, Emblic Myrobolans (*Phyllanthus emblica*), from Rajpootana; Marada (*Terminalia alata*); Buhera, Safaed mosslee, Hurrah (*Terminalia bellerica*), from Mirzapore.

Teree (*Casalpinia*), A. Sconce, Esq., from Chittagong.

Divi divi (*Casalpinia coriaria*), grown in the Botanic Garden, Calcutta.—Dr. Falconer.

Mangrove bark (*Rhizophora Manglessii*), from Arracan, Malabar, and Singapore.

Babool bark (*Acacia arabica* and *Acacia catechu*), from Madras, Sindh, Shahjehanpore, Rohilkund, and Assam.

Araraputtai, Tangada jegota (*Cassia auriculata*), from Vizagapatam; Saracondraputtai (*Cassia fistula*), from Madras and Tinnivelly.

Jamoon bark (*Eugenia jambolana*), from Cuttack.

Peal bark, from Cuttack.

Saul tree bark (*Shorea robusta*), from South West Frontier, and Vizagapatam.

Gallnuts, from South-West Frontier.

Pomegranate bark, Daruncka puckl, Dadima segota (*Punica granatum*), Kémaon, Vizagapatam.

Galls of Tamarisk, Sumrut ool Usl (*Tamarix Indica*), from Bombay and Lahore.

Catechu extract (*Acacia catechu*), from Rutnagherry; Kut, from Malabar, Moorshedabad, Calicut.

Kino gum, Vangay (*Pterocarpus marsupium*), from Malabar.

Dhak gum, Choon gond (*Butea frondosa*), from Rajpootana, Cuttack, and Meerut.

Moduja fugutie (*Butea frondosa*), from Vizagapatam.

Gambir (*Uncaria gambir*), from Singapore.

Mochrus (*Bombax malabaricum* and *Bombax heptaphyllum*), from Bengal and Meerut.

#### (F.) Fibrous Substances.

[Under the head of fibrous substances, cotton is arranged with flax and hemp. It is not, however, of the same structure as these, being considered by botanists to be formed of elongated cells, while the others are formed of true laneous fibres; but as all are applicable to the purposes of weaving and of rope-making, it is more convenient for practical purposes to treat of them together.

From the enormous extension of cotton manufacture in this country, any increased supply of the raw material from new or from old sources is a subject of paramount

importance, and has hence for some time engaged much of the public attention. The Indian collection exhibits a very large number of specimens from a great extent of territory. But the cotton is of very different degrees of quality and of length of staple. The indigenous cotton of Asia which is met with in commerce seems all to be produced by varieties of one species, the *Gossypium indicum*, often called *G. herbaceum* by botanists; but it is truly herbaceous only in cold climates. The cotton of this when compared with American species is distinguished by the shortness and often by the coarseness of its staple, and this, notwithstanding that the matchless muslins of Dacca, as well as of other districts of India, have for ages been manufactured with it. This is owing partly to the care with which the cotton is selected and prepared by the native weavers, and partly to the delicacy of touch of the Hindoos, which enables them to spin a staple which is too short for machinery. It is probable that some of the cotton grown near Dacca was of finer quality than the rest: at all events it is known that it had one peculiarity, that of not swelling in the process of bleaching, and making it, therefore, suitable for the manufacture of fine muslins, the so-called "webs of woven air," and which were attempted to be depreciated by being called in this country "the shadow of a commodity."

It has been inferred that moisture of climate is essential to the production of good cotton. This is no doubt the case, but it must be combined with a suitable soil, for some of the cottons from Java are as coarse as those from the driest parts of India. Some of the indigenous cottons of India are, however, of sufficient good quality to be suitable for many of our manufactures—as, for instance, the cotton produced in Nagpore and Berar, provinces of Central India; also that of Broach, Surat, Coimbatore, and Tinnivelly, which are districts situated along the coasts of the Bombay and Madras Presidencies. Great complaints are, however, made by the manufacturers of this country, and very justly, that Indian cotton is most frequently sent in so dirty and adulterated a state as to be troublesome and expensive to work up; a lower price is, therefore, given for it, and yet this price has to cover the expenses of carriage and freight of the dirt as well as of the cotton. The cultivator complains of the low prices paid him for his cotton, though he has, in some measure, his own carelessness to blame, though the defects due to him have been greatly aggravated by the systematic adulteration of middlemen. Those practically best acquainted with the cotton districts of India are of opinion that the only hope of amendment depends upon the settlement among the natives of European agents, or upon the appointment of Inspectors.

Numerous attempts have been made to grow cotton from American seeds in India, and though it is often stated that the experiments have usually ended in failures, this is far from having been the case, for the specimens of cotton which were grown on the experimental farms, and have since then been preserved in the India House, and are now exhibited, display all the qualities of good cotton. Plants growing in the neighbourhood of the old farms retain all the characteristics of good cotton; while there is no reason to believe that the expenses of culture were greater in former times than they have proved to be in the late experiments, when good prices have been paid to the actual cultivators, and a handsome profit has been realized on the sale of the cotton in this country. The experiments have failed in some districts apparently from the unsuitableness of climate; but they have succeeded, and the cultivation is progressively increasing in other districts, such

as Candeish, Belgaum, Dharwar, Coimbatore, and Tinnivelly. In the last-mentioned district it is particularly interesting to observe that the cultivation has been taken up by gentlemen from Manchester, though it is generally preferable, because more profitable, to allow the natives to cultivate the cotton, and to agree to purchase it from them when grown. In Candeish, Belgaum, and Dharwar, the culture of American cotton by the natives of India was gradually extending; and it was expected that in the season of 1850-51 about 9,000 bales of Indian-grown American cotton would pass through the station of Dharwar on their way to this country. This cotton can be laid down in Liverpool, all expenses paid, at  $3\frac{1}{2}d.$ , and has frequently sold for  $6d.$  and  $6\frac{1}{2}d.$  a pound. The whole of the details are given in the author's work "On the Culture and Commerce of Cotton in India and elsewhere." London, 1851.]

#### Cotton.

Cottons grown in the Experimental Farms of the East India Company from the year 1818 to 1850—India House. Indigenous cottons, from Madras Presidency, Dacca, Agra, Jullundur Doab.

Raw cotton with seed, and after the seed has been extracted, from Gwalior.

Cotton unpicked, from Rajpootana.

Cotton, from Broach, Khandeish, Belgaum, and Dharwar.

Cotton, New Orleans. This is grown in the Belgaum Collectorate. The price mentioned, viz., 12 annas per maund, is the entire cost growing, &c., and ginning.

Cotton (country). This is grown in the Belgaum Collectorate. The price is 10 annas per maund.

The following is a statement of the cultivation of cotton in the Dharwar and Belgaum Collectorates for the year 1849-50:—

#### Dharwar Collectorate.

|                      | Cultivation<br>in 1849-50. | Yielding about<br>Candies of 784 lbs. each. |
|----------------------|----------------------------|---------------------------------------------|
| Country cotton . . . | 225,685                    | 18,135                                      |
| New Orleans . . .    | 15,573                     | 1,557                                       |
|                      | <u>241,258</u>             | <u>19,692</u>                               |

#### Belgaum Collectorate.

|                      | Cultivation<br>in 1849-50. | Yielding about<br>Candies of 784 lbs. each. |
|----------------------|----------------------------|---------------------------------------------|
| Country cotton . . . | 145,216                    | 10,000                                      |
| New Orleans . . .    | 3,058                      | 180                                         |
|                      | <u>148,274</u>             | <u>10,180</u>                               |

Of this cotton one-quarter is kept in this country for native manufactures, and three-quarters exported to Great Britain.—Bombay Report.

Cotton wool, from Rao of Cutch. This is a small specimen of the Cutch cotton, which is grown in small quantities for home consumption only.

Ladom and Oopum, two indigenous cottons, Bourbon, and Nankeen cotton, from Salem.—G. F. Fischer, Esq.

Cotton pods from American seed, from Madras.

Mexican or New Orleans cotton from Government Farm, cleaned by saw gin, from Coimbatore.—Dr. Wight.

Oopum, or native Indian cotton, cleaned by American saw gin, from Coimbatore.—Dr. Wight.

Raw cotton and cottons for spinning yarns, from Assam and Moulmein.

Raw cotton (*Gossypium herbaceum*) from Palembang, Sumatra.

Cotton grown as second crop on rice land, cleaned and uncleaned; upland variety, grown both as annual and perennial, cleaned and uncleaned, from Java.

Cotton, from Pernambuco seed, grown at Sarawak, in Borneo.

Fishing lines of cotton, from Calicut.

Ropes made of cotton (*Gossypium herbaceum*), from Coimbatore and Bellary.

Cotton twist, from Palembang, Sumatra, Celebes, Java.

#### (G.) Fibres.

[The production of fibres fit for weaving into cloth and for rope-making is hardly of less importance than that of cotton; and India abounds in so great a variety of them, as is evident even from the collection exhibited, that there is hardly a want that might not be supplied from thence. It is curious, though India abounds in both the hemp and the flax plant, that neither are cultivated there on account of the fibre for which they are so much valued in Europe. The flax plant may, however, be seen forming an edging to many fields of corn, being cultivated on account of its seed (linseed), which is now both exported and oil expressed from it, while the stalks are thrown away, though flax has been prepared from them of good quality at Manghyr, &c. The hemp in the plains of India is cultivated solely on account of its intoxicating properties (see Class III. (D.), p. 873). But in the Himalayan mountains, where the climate is more suitable, strong rope and canvas are prepared from the fibre, which the difficulties of access alone prevent at present from becoming extensive articles of commerce. But for these India possesses a vast number of substitutes, some of which may yet come to rival them in the commerce of the world, from the extent of their useful properties. It is curious that to one of these a name is applied which would seem to be the original of our English word hemp, and which is itself derived from *hauf* and *hennip*. *Crotolaria juncea*, which in habit somewhat resembles Spanish broom, is cultivated in most parts of India for its fibre, which is used for the same purposes as hemp, and is called *sun* and *sunnee* in different parts of India, but, in the Madras peninsula, *janapum*. It is a useful substitute for hemp, but usually inferior in strength to what is called brown Indian hemp, the produce of *Hibiscus cannabinus*, also called *sun* in Western India, but *Ambaree* at Bombay. Several other species of *Hibiscus*, though not extensively cultivated, are similarly useful, as well as others of the same natural family. *Eschynomene cannabina*, or the *dancha* of Bengal, is similarly used; but the species and varieties of *jute* or *pat* have become the most extensive articles of export, not on account of the strength, but from the length, fineness, and great cheapness of the fibre. It is used for making the common kinds of lines and floor-cloths, but also, it is believed, of late years, for mixing with other substances in the manufacture of different fabrics. The chemical means which are now adopted for improving the appearance of many of these fabrics, has made that of jute applicable to many purposes of furniture. Another group of these fibres is yielded by what are sometimes called liliaceous plants, such as the agave, or great aloe, as it is sometimes called, the *Yuca*, the *Sansevieria*, the pine-apple, and even the plantain—of all of which a variety of specimens have been sent from the southern parts of India and the islands of the Indian Ocean. Some of these have already been applied to useful purposes, and specimens of the twine and rope made with them have been sent by several individuals; but in great variety by Dr. Hunter, of Madras, who has also shown that many of them are able to take a variety of colours. Some fine fabrics have already been made with the fibre of the pine-apple, plantain, and *Sansevieria*: all of them might be employed for making paper. The plantain is especially abundant, being grown in every village on account of its fruit, and its stems are applied to no use.

Some of the palms also yield fibres useful for rope and mat making, as the coir obtained from the husk of the cocoa nut, the Eजू or black Gummuti fibre obtained from *Arenga saccharifera*, also that of the Palmyra and of the *Chamerops* of Beloochistan.

But the most remarkable, and what will probably become the most useful, are the fibres of two plants which were formerly placed in the genus *Urtica*, or nettle, but are now referred to the nearly allied *Boehmeria*. One of these is particularly interesting as being very closely allied to if not identical with the far-famed China grass. This plant has been known for many years, as it was one of those which was subjected to experiment by the late Dr. Roxburgh, when public attention was turned, in the year 1803, to India for a supply of materials for canvas, cotton, and cordage. The author of this note observed in the year 1836, with respect to this plant and Dr. Roxburgh's observations—"It is interesting to find in the same family with the hemp, the *Urtica tenacissima*, or *Caloce* of Marsden, *Rami* of the Malays, a native of Sumatra, also of Rungpore, where it is called *Kunkhora*, and which Dr. Roxburgh found one of the strongest of all the vegetable fibres, which he subjected to experiment. Average weight, with which lines made of the different substances broke were, *Asclepias tenacissima*, *Jetee* of the Rajmahal mountaineers, 248; *Urtica tenacissima Callooe*, 240. The strongest Sunn, *Crotolaria juncea*, 160. Hemp, *Cannabis sativa*, grown in the year 1800, in the Company's hemp farm near Calcutta, 158, but much stronger when tanned. Europe hemp, however, was always found stronger than Sunn, though not more so than the others. Dr. Roxburgh speaks of the beauty, fineness, and softness of the fibre of this plant, and says he learnt from a friend resident at Canton that the grass-cloth of China is made of this material. It is cultivated in Sumatra for the fibres of its bark. The Malays use it for sewing-thread and twine, and for making fishing-nets. It is as readily cultivated as the willow from cuttings, grows luxuriantly in the northern as in the southern parts of India, throws up numerous shoots as soon as they are cut down, which may be done about five times a-year. Dr. Roxburgh, however, found some difficulty in cleaning the fibres of this plant, notwithstanding his anxious desire to succeed with this substitute for both hemp and flax. *Urtica heterophylla* is another Indian nettle, which succeeds well in every part, and of which the bark abounds in fine white, glossy, silk-like strong fibres (Roxburgh). The stinging properties of the nettle are well known, but they are all exceeded by the last-mentioned plant, as well as by *U. crenulata* and *stansiosa*."—*Illustrations of Himalayan Botany*, p. 334.

In the year 1811 the Court of Directors of the East India Company imported three bales of the Caloce hemp which had been cultivated in the Botanic Garden at Calcutta by Dr. Buchanan, who was of opinion that the plant was identical with the *Urtica nivea* of Willdenow. The Court ordered one bale to be sent to Messrs. George Sharpe and Sons, who reported, on the 4th February 1812, that having brought the Caloce plant to the state of hemp for the use of cordage, a thread was spun of the size of those spun in the king's rope-yards, which bore 252 lbs., whereas the weight required to be borne in his Majesty's yards by Russian hemp of the same size is only 84 lbs. A letter from Mr. Lee, of the Society of Arts, dated 14th June 1845, stated that when the article is cleaned it is strong, soft, and free. Under proper management, the fibre of this plant would be of more value than the best Russian hemp for most of the purposes for which hemp is

used, and it may be made so fine as for many uses to answer the purposes of flax.

Dr. Buchanan mentions that the plant is cultivated in the district of Dinagepore and Rungpore; and in the year 1833, and again in 1836, Major (then Captain) Jenkins, the zealous Superintendent of Assam, called the attention of the Agricultural Society of India to the valuable fibre of the Rheea of Assam or *Urtica nivea*; and now we have several of the officers who are placed under Major Jenkins sending specimens of this Rheea from different parts of Assam.

We have seen that Dr. Roxburgh had been told that the grass-cloth of China was made of this material. The truth of this statement, however, was doubted, as other plants have also been stated to be those employed, as the plantain, pine-apple, *Corchorus*, *Sida liliifolia*, and even the hemp itself. The discussion having been revived of late years, one of the educated Chinese employed in the tea culture in Assam, stated that the nettle-like plant growing in Assam was like that which afforded the material for making grass-cloth in China. The Agricultural Society of India, in the year 1847, addressed Dr. Macgowan, then stationed at Ningpo, to make inquiries on the subject. Dr. M. writes that grass-cloth is manufactured from a plant called *Chu ma* by the Chinese, and which he supposes may be a species of *Cannabis*; but Dr. Falconer rightly observes that the description given by Dr. M. is entirely that of the species of *Boehmeria* (formerly *Urtica*), called *B. nivea*, or *tenacissima*, by botanists, or of a newly-allied species. Some specimens which were subsequently received confirmed Dr. Falconer's opinion, that the *Chu ma* is the same plant as the *Boehmeria nivea* of botanists. It may be stated that the specimens, though imperfect, of the China grass-cloth plant in the Exhibition closely resemble, though they do differ a little in the appearance of the bark from the pieces of the Assam plant in the Indian collection. It is important to state that, for all practical purposes, Mr. Sangster considers the produce of the two plants as being identical. The Indian plant is found abundantly in Assam and Cachar, in the Shan country, and in Ava, and in the Tennesserim provinces, besides in the other above-mentioned localities. Hence there is an abundant supply of a very valuable material, which may shortly become an important article of commerce, by the adoption of suitable measures for the culture of the plant, and for facilitating the separation of its fibres.

Another species of *Urtica*, the *U. heterophylla*, is hardly less important, from the appearance, softness, and strength of its fibre, but it is probably not so abundant. Dr. Wright particularly calls attention to its fibre, as well as to that of the *Yercum*, or *Calotropis gigantea*, which belongs to the same natural family as the *Jetee* or *Asclepias tenacissima* of Roxburgh. The whole Indian series would afford a fruitful source for experiment and interesting observation, tending greatly to increase our supply of fibre, and to develop the resources of the country in which they are so abundantly produced.]

*Hemp, Flax, Pine-apple, Plantain, Nettle Fibre, &c.*

Hemp, true (*Cannabis sativa*), with twine and canvas, from Kemaon and the Himalayas generally.

Flax, from Monghyr.

Fibre, hemp, and cordage, Dunchai (*Æschynomene cannabina*), contributed by Messrs. Thompson, manufacturers, from Calcutta.

Plantain fibre of the Philippine Isles (*Musa textilis*), cultivated by Dr. Roxburgh, near Calcutta.

Plantain fibre, from Dacca.

Fibre of plantain stem (*Musa paradisiaca*), from Singapore.

Plantain fibre (*Musa paradisiaca*); plantain fibres, dyed orange, green, and red: oakum, or tow, of plantain stalks: rope from fibres of plantain stems; strong thread, whip and line plait, from plantain stems; tarred rope, made from plantain fibres, Dr. Hunter, from Madras.

Pine-apple fibre, prepared for weaving, from Assam.

Pine-apple fibre and twine, from Singapore.

Pine-apple fibre, from Celebes and Java.

Flax from pine-apple, from Calcutta.

Fibres of pine-apple (*Ananas*), from Travancore.

Fibres and oakum of pine-apple, from Madras.

*Sansevieria zeylanica*, Morgahbee, grown in the division of Cuttack, and used for bowstrings. The hemp therefrom is prepared by scraping each leaf, when in fresh water, with a knife, and separating the fibres from the vegetable substance. The preparation admits of no other process without impairing the strength of the fibre.

Bow-string hemp, fibres of (*Sansevieria zeylanica*), from Cuttack and Malabar.

Fibres and oakum of marool (*Sansevieria zeylanica*); fibres of marool, dyed orange, red, maroon, and green, from Dr. Hunter, of Madras, and from Coimbatore.

Ropes and fibres of marool, from Madras and Coimbatore.

Rope, made of fibre of aloe (*Agave americana*), from Coimbatore.

Fibres and oakum of large aloe, dyed orange, red, maroon, and green; Whipcord, from large aloe, from Madras.

Fibres of the aloe; Agave. Cordage made from the aloe, from Madura.

Fibre of the small aloe (*Agave? vel Aloe?*), orange, red and crimson.

Rope made from the fibres of wild aloe, from Madura.

Fibres of the small or garden aloe; *Sansevieria*. Fibres made into oakum of the small or garden aloe; from Madras.

Fibres and oakum of small species of *Yucca*, from Madras.

Flax, so called, but is the produce of *Boehmeria candicans*, a plant nearly allied to that yielding China grass, first and second quality, dressed, from Java.

Nettle fibre in various stages, *Talli rami*, from Singapore.

Fibres of Neilgherry nettle (*Urtica heterophylla*), sent by Dr. Wight, from Neilgherries.

Caïsse heap (*Urtica tenacissima*), grown by Dr. Roxburgh, nearly fifty years ago, near Calcutta.

Rhea fibre (*Urtica tenacissima*), from Rungpore in district Moorsshedabad, and from Major Jenkins and other officers in Assam.

Fibre of *Urtica vel Boehmeria nivea?* or China grass, imported by Mr. W. Sangster, of Cheapside, from Assam.

*Sua, Jute, and other Tropical Substitutes for Hemp and Flax.*

Fibre of *Sua*, or *Crotolaria juncea*, from Calcutta.

Thin rope of fibres of *Jasapum (Crotolaria juncea)*, from Coimbatore.

Stuffed and lal monty pat (*Corchorus olitorius*), from Rungpore in district Moorsshedabad.

Two other varieties of *Jute*, or *Corchorus olitorius*, from Bengal.

Theng-ban-shaw, Pa-tha-you-shaw, Shaw-phyoo, Ngantsoung-shoro. Specimens of raw materials and rope made therefrom; from Arracan.

Shau-nu, ee-gywot-shaw, from Arracan.

Brown Indian hemp, Ambari and Sun (*Hibiscus cannabinus*), Dr. Gibson, Bombay.

Thick rope of Palungeo (*Hibiscus cannabinus*) from Coimbatore.

Fibre of *Hibiscus strictus* and *Sabdariffa*, grown by Dr. Roxburgh.

Areah lota, Maranhoree lota, Moonga lota; bright fibre hemp for making rope, from Assam.—Major Hannay, Baboo Demanath, and Lakenath.

Bark string and ropes Putwa (*Bauhinia racemosa*) from Bhagulpore.

Fibre, Tongoose (*Asclepias tenacissima*), from Madras.

Fibres of bark of yeruam (*Calotropis gigantea*), from Madras.

Fibre of a species of *Urena?* from Calcutta.

Fibre of *Parkinsonia* stalks (*Parkinsonia aculeata*), from Madras.

Pulas cordage (*Butea frondosa*). Bhabooree, a grass rope. Chehoor, a forest tree. Patoor, or Asta cordage. Beerbhoom.

Bark of Trap tree (*Artocarpus*), from Singapore.

Thread for making cloth: Mazankoree thread; Reah fibre and thread; Pat thread; Reha fibre; from Assam.

Bark of the Sasa tree; of *Roxburghia*, and of *Artocarpus*, from Assam.—Captain Reynolds and Mr. Simons.

Coir rope from cocoa-nut husk (*Cocos nucifera*), from Calicut in Malabar.

Ejow or Gummuti fibre. The hairy outer covering of *Arenga saccharifera*, or Gummuti Palm (see Griffith's Palms of British India), as collected from the tree. This fibre is much esteemed for making ropes, especially cables, for which purpose it is peculiarly adapted from not being liable to injury if stowed away below when wet with salt water. Ditto, separated from the stiff fibres. Ditto, prepared for manufacture or exportation. Ditto, prepared as sennit or coarse line for making ropes or cables.

Fibres of Palmyra leaf (*Borassus flabelliformis*), from Madras.

Fibre of *Chamerops Ritchiana*, from Beloochistan.—Dr. Stocks.

Gogoo rope, from Cuddapah.

Wackanoor fibres, from Travancore.

Bow strings of fibres, from Wynaad and Calicut.

(Ga.) Cellular Substances.

Pith-like stem of *Eschynomone aspera*, formerly *Hedysarum lagenarium (Skola)*, common in wet and marshy parts of India.

Solah, from the vicinity of Calcutta. The natives make hats, caps, bottle and glass covers, life-preservers, and toys of it.

Inner bark of the Himalayan birch (*Betula bhojputtra*), Himalayas.

(H.)—Timber and Fancy Woods used for Construction and for Ornament.

A collection of 117 specimens of Indian and a few Ceylon woods made up into the form of books by the late Dr. Roxburgh. The Tamul names are written upon many of the specimens. Mr. Wilson Saunders has added greatly to the value of this collection, and the two following, by having ascertained the specific gravity of all the principal woods, and made notes on the working qualities of many of them.

A collection of 51 of the principal woods, chiefly from the Bengal Presidency and Himalayan Mountains, in good-sized specimens, sent to the East India House by Drs. Roxburgh and Wallich. The properties of the greater number of the principal Indian woods have been detailed by Dr. Roxburgh, in his "Flora Indica" and in his "Coromandel Plants."

The following are the botanical names of the trees yielding these woods:—

*Quercus lappacea, lanceifolia, and fenestrata.*

*Castanea indica. Corylus lacera?*

*Taxus nucifera. Prunus puddum.*

*Juglans regia. Juglans pterococcea.*

*Artocarpus Chaplasha. Cedrela toona.*

*Terminalia citrina. Terminalia chebula.*

*Odina Wodier. Cynometra polyandra.*

*Diospyros racemosa. Sophora robusta.*

*Gmelina arborea. Nerium tinctorum.*

*Tetranthera nitida. Phyllanthus longifolius.*

*Swietenia febrifuga. Lagerstromia Regine.*

*Vateria lanceifolia. Osyris peltata.*

*Santalum album. Olea fragrans.*

*Scytalia Longan. Scytalia trijuga.*

*Mespilus japonica. Averrhoa Carambola.*

*Acer laevigatum. Elaeagnus spec.*

Eugenia spec. Rhododendron arboreum.  
Mimosa odoratissima. Cassia sumatrana.  
Rhizophora odoratissima. Andrachne apetala.  
Dombeya melanoxylon. St. Helena ebony.

Selections from a collection of 457 woods of timber trees and shrubs from the Bengal Presidency and its eastern frontier, sent by Dr. Wallich to the India House. A duplicate collection was given to the Society of Arts, and is enumerated in the Transactions of the Society. Vol. XLVIII., part ii., pp. 439 to 479. 1831.

A collection of 15 cups, turned out of Indian and Himalayan woods, sent by Dr. Wallich to the India House.

Mahogany wood (*Hamatoxylon campechianum*), grown in the East India Company's Botanic Garden, near Calcutta, and a tea-caddy made out of it.

A collection of cubes of Teak wood, with their specific gravities, from the Marine Department in the India House.

A collection of 262 specimens, with their weights and principal properties, from Tinnivelly, Travancore, Paulghat, North and South Canara, with some from Penang, forwarded by Colonel Frith to Lieutenant-Colonel Bonner, Military Storekeeper, East India House.

Specimens of the deodar wood (*Cedrus deodara*) of the Himalayas, and of the cypress (*Cupressus torulosa*) of the Himalayas. J. F. Royle, M.D. These are exhibited, because so many landed proprietors have planted the hardy deodar on their estates, and it is likely to become a valuable timber tree. The cypress is less hardy.

Teak, marked S T. This specimen, from the forests of Soonda, in the Madras territories, is sent for comparison with the Northern or Surat teak, which is grown in a drier country and a more stubborn soil. Price varies from 9 rupees to 22 rupees per 20 cubic feet when brought to the coast.

Teak, marked N T. This is the Surat teak just mentioned: it is said to be much harder and more durable teak than that from either Malabar, Canara, or Moulmein.

Kao wood. This grows in the hills near Kurachee, and more abundantly on the Belovat Hills to the northward. A round box turned out of it. This has been ascertained, by Dr. Stocks, to be a species of olea or olive, of which he has sent specimens to Dr. Royle. It is used in Seinde for making combs; Dr. S. thinks it might be useful for wood engraving.

Specimens of wood of the following trees, growing in the districts of Bareilly and Pilibet, in the Rohileund division:—*Phyllanthus Emblica*. *Melia azadirachta*. *Cedrela*. *Shorea robusta*, two specimens. *Mimosa serissa*. *Calyptranthes*, sp. *Dalbergia sissoo*. *Acacia Arabica*. *Acacia catechu*. *Nauclea cordifolia*. *Mulberry*. *Bassia latifolia*. *Bombax heptaphyllum*. *Nauclea parvifolia*. *Wrightia mollissima*. *Plum. Grewia*. *Rohunee*? *Chowlae*? *Urseina*? *Goshum*? *Khumar*?

Grown in the district of Mirzapore:—*Bijedar diptero-carpus* (*bijedar*). *Asun Pentaptera glabra*. *Abnoos Diospyros* (ebony). *Sukooa Conocarpus* spec. *Terminalia bellerica*. *Terminalia sufed mooslee*. *Terminalia hurrah*. *Phyllanthus emblica*.

Specimens of wood of the following trees, grown in the late Dr. Carey's Botanic Garden at Serampore, near Calcutta:—*Eugenia polypetala*. *Robinia macrophylla*. *Dalbergia latifolia*. *Mimusops hexandra*. *Cinchona gratiissima*. *Diospyros sapota*. *Diospyros montana*. *Dillenia pentagyna*. *Dalbergia ougeinensis*. *Careya sphaerica*. *Gmelina arborea*. *Erythrina ovalifolia*. *Nageia Putranjiva*. *Dalbergia* sp.?

Timber, growth of the Tennasserim provinces:—*Sassafras* wood, sp. of *Laurus*. *Mountain erythrina*. *Sterculia fetida*. *Mountain ebony*, spec. of *Bauhinia*. *Mergui red wood*. *Mergui black wood*, *Dalbergia latifolia*. *Tavoy lancewood*, one of the *Apocynæ*. *Fagraea fragrans*. *Pinus latteri*. *Tectona grandis*. *Ingaxycarpa*. *Careya arborea*. Four specimens of *Diospyros*. *Hereteria minor*. *Vitex arborea*. Species of *Grewia*, *Rosewood*, *Thanaka*, and *Wild Sandal-wood*. *Jarool*, *Lagerstrœmia Reginae*. *Hopes odorata*. *Pterocarpus Wallichii*. *Calophyllum*.

Nine specimens of timber from Bhagulpore, in the division of Patna.

Grown in the province of Chittagong, and supplied by Captain Marquard:—*Gorgetiah*, or *Dactylocarpus*. *Butlenah*, or *Conocarpus*. *Kalee bale*, or *Diospyros melanoxylon*. *Melanoxylum*, black ebony. *Koom Koyre*, *Acacia* spec. *Chukrasse*, *Chickrassia tabularis*.

Grown in the neighbourhood of Calcutta:—Specimens of *Adenanthera pavonina* and *Santalum album*. Wood and plank.

Grown in Assam, and sent by Major Hannay:—*Top sofa*. *Laurus sassafras*, *Goondsoora*. *Terminalia*, *Bhota*. *Hindoo*, *Palm Toan*. *Oak*, *Hingoree*.

Timbers grown in the forests of Assam, and received, under their local names, from Mr. Martin:—*Saul*, *Poma*, *Cattul*, *Ratta*, *Babul*, *Nahoo*, *Sullock*, *Korai*, *Agar*, and *Cham*.

*Nadosur*, contributed by Captain Reid.

Timbers grown in the province of Arrakan:—*Moo-tso-ma*, *Bhaman*, *Parawa*, *Tuwot*, *Thenganet*, *Kyaudevet*, *Teing*, *Tswanhyee*; *Pyaing*, two specimens; *Theratsoing*, *Pyawa Tulli*, *Therock*, *Pyanany Thekuddo*, *Tuwot*.

The following specimens of woods were received from Mr. Blundell, Commissioner of the Tennasserim Provinces, in 1835, under the native names here given. They remained from that period to 1847, being twelve years, exposed to the destructive influence of white ants, &c., when, at the expiration of that time, they were reported on by the then Officiating Superintendent of the Honourable Company's Botanic Garden, in October 1847, as follows:—

#### TIMBER from the PROVINCE of AMHERST.

*Povin-gnyet*. Used for house posts and rafters. It is a kind of Jarrool, a good serviceable wood, and would do for piles, posts, and beams.

*Tshiet-Khyeen*. Used for house posts. A superior kind of crooked-grained Saul.

*Eng-gyeng*. Also used for posts of religious buildings. A useful wood, but subject to split.

*Gan-gan*. A very strong, tough, hard, crooked-grained, fibrous, red wood, which would do for machinery or any purpose requiring the above properties.

*Myeng-kha*. A useful wood, like *Babool*. *Acacia arabica*.

*Ma-thloa*. Used for house posts; probably *Artocarpus integrifolius*, or *Jack-wood*.

*Bhai-bya*. Ditto. *White Jarrool*.

*Meet-gnyoo*, firuit-tree. It is a red-coloured, useful, strong, heavy wood, probably a species of *Mimosa*.

*Naoo*. Used for house posts; the leaves, flowers, and roots are said to be used for medicine. It is a brown, substantial, solid wood, not liable to the attacks of insects.

*Zee-byion*. This is a compact, close wood, like *Lagerstrœmia*, or *white Jarrool*. It is used for house posts, and is liable to split, but is free from the destructive influence of insects.

*Pyeen-ma*. House posts, carts, boats, paddles, oars, &c., are made from this, which is a capital wood, a kind of Saul, and would answer for all the purposes of common Saul.

*Kya-zoo*. This is a very heavy wood, like Saul.

*Maza-neng*. This is a close-grained wood, nearly allied to Teak. It is used for house posts, carts, boats, paddles, oars, &c.

*La-phyan*. A heavy, solid, large-sized timber, but rather liable to injury from a peculiar insect, not white ants.

*Nyaung-lan*. Saul, of a peculiar kind, employed for beams, rafters, and boat-building. The root is used as umbrella stocks.

*Kywon-gaung-noay*. A close, heavy, compact, tough, yellowish-white wood, of which house posts and rafters, &c., are made.

*Ban-boay*. It is a strong and useful wood, a kind of *Mimosa*, employed as house posts.

*Moma-kha*. Employed for gun-stocks; it is a reddish,



softish wood, close and compact, fit for turning purposes, and exempt from attacks of insects.

Tha-byion. A useful timber, probably *Eugenia*.

Tha-khwot. This wood is used for sandals; it is a kind of white Teak.

Tha-bwot gye. This is a good heavy valuable timber, somewhat like iron-wood.

Theng-gan. Employed for house posts, carts, boat-buildings, paddles, and oars. It is an excellent compact wood, fit for gun carriages.

Taup-sha. Employed for house posts, and would answer for common carpentry, but it is subject to split; the bark is supposed to be medicinal.

Kiep-maup. Employed for cart-wheel spokes. Superior wood, free from attacks of insects; the tree is said to have an edible fruit.

Yoga-theet. The wood is used for carved images, and the bark used as soap.

Kiep-yo. A heavy, good wood, but small, used for house posts and rafters.

Thiem. Used as house posts, rafters, and general purposes of carpentry.

Myaun-ngo. White Sissoo, used for rafters.

Myaup-loaut. Cedrela, a kind of superior Toon.

Eng. Wood used for boat-building, and produces oil. It is a strong, heavy, useful, grey wood, suited for beams, piles, and the like.

Nga-soay. This is a solid, very heavy, reddish wood, and answers for house posts and rafters.

Tan-label. A heavy, white wood, employed for house posts and other common purposes. It is not liable to injury from insects.

Koup-ha. This is a light, soft wood, not subject to injury from insects. It is probably *Nauclea cadamba*, and is employed for carved images.

Zeng-bywom. Employed for house posts. It is a useful wood, equal to Jarrool.

Anan. Used for constructing temples. It is a yellowish-white, heavy wood.

Yammandy. Used for carving images and making drums. It is a useful and valuable wood.

Ban-kha. Used for house posts, and other common purposes. It is a peculiar kind of wood, colour grey.

Seet-seen. Used for the construction of religious houses. It is a red, compact, very ponderous, and highly valuable wood.

Teng-khat. This is a heavy white wood, solid, and fit for turning purposes; used for rice-pounders, &c.

Tha-nat. It is a kind of grey Teak.

Kyway-thoay. Is a strong, solid wood; probably will prove to be a kind of *Acacia*. Used for house posts and rafters.

Mya-ya. Hard and close-grained wood, used for rafters; it is strong and durable, and would answer for beams, &c., being exempt from the attacks of insects.

Tswot-ba-lwot. This is said to be a fruit tree; the wood resembles Jarrool.

Bijion. This is used for house posts, rafters, and the like purposes; it is a heavy, compact, grey, close-grained wood.

Theet-to. This is said to be a fruit tree; the wood is employed in boat-building, making carts, &c.; it is a dark-brownish grey, hard, heavy wood.

Oun-thuay. A white soft wood, not subject to injury from insects; it is employed for common carpentry.

Kya-nan. This is a most hard, close-grained, ebenaceous wood, of dark red colour, used for house posts, musket-stocks, and spear-handles.

Than-kya. The fruit of this tree is employed for ring-worm. The wood is like Saul.

Meng-ba. Used for house posts and rafters. The wood looks like a kind of Saul, and would answer all the purposes of that wood.

Theet-ya. Employed for rice-grinders or pounders. It is a superior, compact, close, tough, brown wood, fit for anything requiring great strength and durability.

Ka-theet-nee. Employed for house posts, boats, and

carts. It is a heavy, hard, grey wood, rather liable to injury from insects.

Na-kyeen. Employed for house posts and rafters. This is the Sundrie wood Calcutta (*Heritiera minor*), where it is so common as to serve for fire-wood, although from its superior qualities for buggy-shafts, hackery or cart axles and wheels, and other purposes requiring great strength and toughness, it is highly prized.

Tsoay-dan. Heavy, hard, tough wood, not subject to insects, and, being tough and short, it is suited for wheels, musket-stocks, &c.

Pa-ra-wa. A hard, red, compact wood, with large fibre, and fit for gun-carriages or other similar purposes. It is exempt from attacks of insects. It is used for spears and arrows.

Tshan-tshay. A useful wood, but liable to attacks of insects, and to split.

Pinnai. This is said to be a fruit tree; the wood affords a yellow dye, and is a compact, handsome, yellow wood, suitable for common cabinet purposes. It is probably an *Artocarpus*.

Pad-dan. Used for making drums and musical instruments. It is a kind of red Sander's wood.

Tshaup-yo. Used for house posts and musket stocks. It is a heavy white wood, exceedingly strong, but liable to attacks of insects.

Toung-bien. Used in boat-building and for making carts. It is a strong, heavy wood, well adapted for handles of tools, &c.; it is probably a kind of Teak.

Kywon. A kind of Teak wood.

Daup-yat. Employed for rafters; it is a beautiful yellowish-white compact wood, but has a tendency to split. The leaves are used as a dye.

Dien-neeung. Used for rice-pounders; it is a close-grained, strong, compact, brown, hard wood.

Tseet. Employed as house posts and in boat-building. Saul of small calibre.

Theet-phyion. This is used for fan-handles; it is a useful white wood, and would answer for common carpentry; it resembles *Mimosa serissa*.

Thab-ban. This is used for boat-building and making carts; it is a kind of Teak, but rather heavier than the usual kind.

Kywon-bo. This is used for house posts, rafters, and oars; it is probably a sort of Teak.

Bep-than. Used for making handles for spears and swords; it is a superior wood, and looks like white Jarrool.

Lammay. Used for house posts; it is a red, light, but useful timber, like Sandal-wood, and is free from attacks of insects.

Kiep-dep, ditto, a kind of Saul.

Bhyeng-tseng. This is a close-grained, compact, grey wood, fit for general purposes, and seems to be exempt from attacks of insects.

Tshwai-lwai. Used for musket stocks and sword sheaths; it is a hard, red, crooked-grained wood, fit for cabinet work.

Liep-yo. Used for making carpenters' tools; it is a very compact and heavy, but small-sized timber.

Peng-lay-oun. Used for spear handles; it is a most valuable wood, compact, homogeneous, and very heavy, of a deep brown colour and fine grain, having no tendency to split, and being exempt from attacks of insects.

Raung-thmoo. Used for house posts; it is a kind of Teak.

Thammai. A strong, handsome wood, like *Ægiceras*, or box-wood.

Thep-yeng. Said to be a fruit tree; the trunk affords a compact, fine-grained wood.

Toung-tba-khwa. This is a capital wood for any purpose, gun-carriages or gun-stocks.

Mala-ka. This is used for gun-stocks and carpenters' tools; it is a close, compact, but small-sized wood, fit for hand-spikes, wheel-spokes, and the like.

Toung-tha-byiou. Used for house posts; it is a strong, red, heavy wood, a kind of *Mimosa*.

**Yetha-byay.** This is used for house posts and boat-building; it is a strong wood, suited for door-frames and common carpentry.

**Thanna-dan.** Said to be a fruit tree; it is a reddish-brown, heavy wood, fit for machinery or other purpose requiring great strength; it is totally exempt from attacks of insects, but somewhat liable to split.

**Than-that.** Used for stocks of various instruments; it is a capital wood, and seems to be a kind of Saul.

**Gyo.** Used for house posts, ploughs, hand-spikes, &c.; it is a close-grained, compact, fine wood.

**Yeng-taip.** It is a strong useful wood for posts and common carpentry.

**Lep-dwat.** Used for spear-handles and sword-sheaths; it is a fine-grained, white wood, fit for turning purposes and picture-frames; it is probably the same kind of *Nauclea* which is used for similar purposes in Bengal.

**Tsekka-doun.** This is said to be a fruit tree; the wood is used for house posts, rafters, and boat-building; it is like Teak, but much disposed to split.

**Lien.** Used for house posts and rafters. It is a most valuable compact wood, homogeneous and very heavy, of deep-brown colour and fine grain, and also exempt from attacks of insects.

**Moutha-ma.** Bark used for blue dye, a fine-grained, compact, red wood, but liable to split; it would answer for hand-spikes. It resembles *Myrtus pimentas*.

**Pa-ngan.** Used for boats and oars; it is a compact white wood, and is also in use for making musical instruments. It seems to be *Gmelina arborea*.

**Toung-than-gyee.** A hard, compact wood of dark-brown colour.

**Kha-boung.** A strong wood but small, as strong as oak. The fruit is said to be used for rubbing on buffaloes to keep off flies.

#### TAVOY SPECIMENS OF TIMBER.

**Kywon-bo.** Bastard teak. A soft wood like *Nauclea*.

**Kywon-ma.** A variety of the above.

**Thingan-kyaup.** Employed in boat, ship, and house building, for carts, &c.; it is a close-grained, heavy, strong wood.

**Kadwot-nee.** Used for boat, ship, and house building. It seems to be a kind of *Cedrela* or *Toon*.

**Kaung-thmoo-yoep-say.** Ditto ditto. A rough strong wood, used for posts and carpentry.

**Toung-bhien.** Ditto ditto. Light porous wood like Jarrool, used besides for doors and common or inferior carpentry.

**Miaup-bout.** Ditto ditto. Answers as *Toon* wood for furniture and other purposes.

**Tha-bhan.** Ditto ditto, and for making canoes.

**Takep-nee.** Ditto ditto. Very strong, close-grained, heavy, light-coloured wood.

**Ka-nyeng-kyauing-khyay.** This is likewise used for boat, ship, and house building, carts, &c. It appears to be red *Jarrool*, yields an oil, and is exempt from attacks of insects.

**Ka-nyeng-pyan.** Ditto ditto. Heavy grey wood used for hand-spikes.

**Ka-nyeng-kyauing-khyay.** Ditto ditto. Strong heavy wood rather disposed to split. It would answer for beams and sleepers.

**Aman.** Used for boat building, house posts, and planking. A small tree.

**Mee-kyauing-kyay.** Ditto ditto. A heavy wood exempt from attacks of insects, and might be employed for door frames and strong carpentry purposes.

**Peng-lay-byeen.** Ditto ditto. Small tough wood, might be used for hand-spikes and spear-handles if sufficiently free from knots.

**Kyay-tsay-gyee-khyay.** Ditto ditto. A heavy compact dark wood like walnut, and would do for gun stocks.

**Kyay-tsay-bayoun.** Ditto ditto. Useful for common carpentry, like *Terminalia chebula*.

**Fautheet-ya.** Ditto ditto. A good white-coloured wood, rough, and fit for boat building.

**Theet-ya-nee.** Used for boat building, house posts, and planking. Close-grained brown wood, subject to split, but would answer for hand-spikes.

**Theet-ya-pyiou.** Ditto ditto. Heavy strong wood, probably a kind of *Jarrool*.

**Pyeng-khado.** Ditto ditto. Small-sized, close-grained, and heavy red wood, would answer for hand-spikes, and if the trees are large, for better purposes.

**Khamoung-nee.** Ditto ditto. Heavy wood, exempt from the attacks of insects; it would answer for general carpentry purposes.

**Khamoung-pyiou.** Ditto ditto. Small-sized, light, but compact yellowish grey wood.

**Kharaway-nee.** Ditto ditto. Porous, but rather heavy strong wood, not liable to injury from insects.

**Theet-ta-gyee.** Ditto ditto. Would answer for door-frames, house posts, and common carpentry. It is something like red *Jarrool*.

**Kengthep-guyung-ywept.** This is employed for house posts and planking. It is a light inferior wood, but the specimen is much eaten by insects, and hardly of any use except to show the quality of the wood.

**Kengthep-Phevot-kyay.** Employed for house posts and planking. It is a sound small-sized timber.

**Pee-daup.** Ditto ditto. Seems to be *Acacia serissa*.

**Katso.** Ditto ditto. Strong *Cedrela*-like wood, and would do for the purpose for which *Toon* is employed.

**Penglay-oun.** Ditto ditto. Strong, rough wood, like *Acacia serissa*.

**Patseng-ngo.** Ditto ditto. A very superior high-coloured aromatic wood, resembling *Toon* or mahogany.

**Eng-beng.** Ditto ditto. Useful for common carpentry.

**Ngoo-beng.** Employed for house posts and planking. Like very strong *Toon* wood.

**Pyaung-pyion.** Ditto ditto. A yellow compact heavy wood.

**Kyep-ye.** Ditto ditto. A kind of Teak.

**Thabyay-nee.** Used for house posts. It is a strong, close-grained, brownish-grey wood.

**Bhan-bhway.** Ditto ditto. Like *Sissoo*.

**Thmeng-ba.** Used for house posts and making cotton cleaners. It is like red *Jarrool*.

**Toung-byeng.** A kind of *Saul*, but of red colour.

**Thiem.** A serviceable timber, and would do for the better sort of carpentry.

**Kouk-ko.** Red *Jarrool*, employed for the bottom planking of boats, &c.

**Kanna-tso.** A fruit tree, having very tough, close-grained wood.

**Ma-yam.** An indestructible strong dark, heavy, red wood, especially valuable for all purposes requiring those properties.

**Toung-kha-ray.** Red *Jarrool* as before, used in boat building.

**Pinnay.** Strong, close-grained, yellow wood, like *Jack*.

**Artocarpus integrifolias.**

**Lienman (Orange).** Heavy, close-grained, light-coloured wood, like that of *Terminalia bellerica*, but of small diameter.

**Mala-ka.** Small-sized strong wood, suited for hand-spikes.

**Patseng-tsway.** Small-sized strong wood, which would do for posts and hand-spikes.

**Tseng-biyoun.** Said to be a fruit tree, having compact greyish-brown wood, fit for carpentry purposes.

**Tag-nyeng.** A useful wood for furniture. The colour and grain are like *Toon*.

**Tha-byoo.** A heavy close-grained wood.

**Toung-bhaut.** Employed for handles of knives and spears. Rough knotty wood.

**Pan-loun.** Used for house posts and other building purposes. It is a red, close-grained wood.

**Myeng-ta-bep.** Ditto ditto. Strong bluish-grey wood, adapted for hand-spikes.

**Noalee-byeng.** Ditto ditto. Close-grained, strong, heavy wood, of small diameter, adapted for hand-spikes.

**Thmeng-tshout.** Ditto ditto. Fit for door frames and

boat beams; and is a brown heavy coarse wood of small diameter.

Bha-ta-ka. Useful for common carpentry, like red Jarrool.

Peng-lay-kaboay. Employed as house posts; a heavy, but small sized, wood, fit for hand-spikes.

Tsoay-dan. Used for gun-stocks, and might answer, like Sissoo, for gun-carriages.

Meep-thua-ban. A small-sized close-grained grey wood, employed as spear handles, spade shafts, posts, &c.

Theet-ya-han. Used for house posts. It is a close-grained Teak.

Bep-than. Ditto ditto.

Bep-won. Ditto ditto. But it is an inferior timber, like Mangoe wood.

Eng-way. Ditto ditto. Light close-grained yellowish-white wood.

Toung-byiou. Ditto ditto. Close-grained brown wood, subject to split, adapted for hand-spikes.

Mya-kamaun. Used for knife and spear handles. It is an ebenaceous strong black wood, which might be highly useful to cabinet-makers.

Wouthay-khyay. A compact, strong, yellowish-white wood, but of small size.

Zoo-lat. Small compact, heavy, yellowish-white wood.

Daup-yan. Used for house posts and other building purposes. It is like *Myrtus pimenta*, and would serve for hand-spikes.

Yau-ma-lay. Used for house posts. This is a strong rough white wood, like white Jarrool, but heavier.

Timber forwarded from Moulmein by J. R. COLVIN, Esq., Commissioner of the Province, 1847, under their native names, six of which have since been identified by Dr. Falconer during his visit to the Teak forests of the Tenasserim Provinces in 1848-49:—

*Lagerstromia macrocarpa*, Pyen-ma, commonly known under the name of Jarrool.

*Careya spherica*, Bambooce.

*Cyrtophyllum fragrans*, Anan, of the Nux Vomica tribe; one of the hardest, most compact, and heaviest woods known.

Pyen-ma and Kazaret. Undetermined.

*Pterocarpus indica*, Podauck, one of the Leguminosae, called Rosewood. It is a very beautiful and hard compact timber, closely resembling the Andaman wood.

Indike, Ebony.

Anan as above.

*Hopea odorata*, Thengan, of the Dipterocarpeae or Saul tribe; a very strong but coarse-grained timber.

*Inga xylocarpa*, Pyangadean, belonging to the Acacia tribe, commonly called the iron wood of the Arrakan provinces, very hard, dense and durable.

*Pterocarpus indica*, Paddock, as above. Rosewood of the Tenasserim provinces, a very beautiful, hard, compact timber resembling "Andaman wood," which is occasionally seen in the Bazaar of Calcutta.

#### TIMBER AND FANCY WOODS FROM THE MADRAS PRESIDENCY.

[The properties of many of the timber trees of the Madras Presidency have been described in Dr. Roxburgh's works, as quoted above. Dr. Wight and J. Rohde, Esq., have given much valuable information respecting many of the timbers enumerated in the following lists in the printed Report of the Proceedings of the Madras Central Committee, but of which only a single copy has as yet reached this country.]

NOTE.—Name in (3) Telinga; (4) Hindes; (5) Tamool.

#### From Madras.

Noonah wood.

Portia wood. 3. Gengarauni kurra. 5. Porsum marum (*Hibiscus populneus*).

Woodiah wood. 5. Oathya marum (*Odina Wodier*).

Eroombala wood. 5. Iloombilly marum (*Feriola burifolia*).

Satin wood. 3. Billa kurra (*Chloroxylon Swietenia*).

Atta wood. 5. Anthau marum.

Ven teak. 3. Takoo kurra, Hindes, Sagwan. 5. Ven-takoo marum (*Tectona grandis*).

Ausena wood, Pterocarpus.

Mango wood. 3. Mamide kurra, Hindes, Am. 5. Mangkuttai (*Mangifera Indica*).

Saul wood. 3. Yapa. 5. Aussenee (*Shorea robusta*).

Peddawk wood. 3. Peddawkoo kurra.

Pala wood. 3. Pala kurra. 5. Paulai marum (*Mimusops hexandra*).

Trincomallee wood (*Berrya ammonilla*).

Rosewood. 4. Sissoo. 5. Eatty or Vutty marum (*Dalbergia Sessoides*).

Chittagong wood. 5. Aglay, or Sitticam marum. (*Chickrassia tabularis*).

Moulmein teak, Takoo kurra, Sagwan, Taka marum (*Tectona grandis*).

Pegu wood, Jarkoo, Sagwan, Jake marum (*Tectona grandis*).

Malabar teak-wood, Takoo kuna, Saguan, Take marum (*Tectona grandis*).

Simboorah teak-wood, Takoo kuna, Saguan, Take marum (*Tectona grandis*).

Coimbatore teak-wood, Takoo kuna, Saguan, Take marum (*Tectona grandis*).

Thimbeam teak-wood, Takoo kuna, Sageran, Take marum (*Tectona grandis*).

2. Angelly wood. 5. Anjelly marum.

2. Model, or puteba Ootoo wood.

2. Thingam wood.

2. Pengandoo wood.

2. Ooroopoo wood.

2. Ravirardoo wood, Kadirardoo kurra.

2. Congoo wood.

Autcha wood. 4. Abnoos. 5. Autcha marum (*Diospyros ebenaster*).

2. Peemah wood.

Minty wood.

#### From Madras.

Poplar-leaved Hibiscus, or Tulip-tree, Gengaramin kurra, Paris kajhar (old wood), Porsum marum (*Hibiscus populneus*).

2. Pagoda wood.

Palmyrah wood, Thatee kurra, Tar, Panung kutta (*Borassus stabelliformis*).

Red saunders wood, Chandanum Chander soorkh, Segapoo chandanum (*Pterocarpus santalinus*).

Jackwood, Palan samoo, Pimass, Palan marum (*Butea frondosa*).

Guava wood, Jamakurra. 4. Jam. 5. Goaya khutai (*Psidium pyrifera*).

Palay wood. 3. Paula kurra, Palla, Paulai marum (*Mimusops hexandra*).

Veppaley wood, Palava renoo kurra, Dooheer kela kree, Veppalay marum (*Wrightia antidysenterica*).

Eledai wood, Raigoo kurra, Jungbe beer, Yelandai marum (*Zizyphus jujuba*).

Wood-apple, Valaga kurra, Kowcet, Vella marum (*Feronia elephantum*).

Satin wood, Billa kurra. 4. Hill dhawra (*Swietenia chloroxylon*).

#### From Cuddapah.

Ebony wood, Tookey, Abnas, Kakatstee (*Diospyros ebenaster*).

Red saunders wood, Chandanum, Chanda soorkh, Segapoo chandanum (*Pterocarpus santalinus*).

Margosa wood, Vepa kurra, Neem, Vepum marum (*Melia Azadirachta*).

Acacia Arabica wood, Nalla tooma, Siah kekur, Karoo velum (*Acacia Arabica*).

Rusty Mimosa wood, Tella tooma, Keekursafaed (*Vilvilum, Mimosa ferruginea*).

Chindaga wood, Chindaca, Soorjsiah, Katoo valay.

Ash-coloured Mimosa wood, Vellatorroo, Wardil Vidatil (*Mimosa cinerea*).

Yeumaddy wood, Yeumaddy, Eumaddee, Eumuddee.

Saul wood, Yepai, Yepa aussence (*Shorea robusta*).  
 Bassia wood, Yepa, Mohe'ka jar, Yelloopai (*Bassia longifolia*).  
 Red wood, Somee, Some'ka ther, Semmarum (*Swietenia shrifoga*).  
 Podo wood, Poda. 4. Pallas.  
 Woodooga. 4. Akola (*Alangium hexapetalum*).  
 Cassia wood, Rela, Amltas, Kondee (*Cassia fistula*).  
 Marandum wood, Muddee, Jungle kameng, Maroodum (*Terminalia alata*).  
 Muddee wood, Muddee. 4. Muddee (*Terminalia alata*).  
 Kondapala wood, Konda pala. 4. Khernee kee lakree.  
 2. Yerra polhee. 3. Nulla polhee. 4. Sagharee kala kree.  
 Bel wood, Maredoo, Bel phal, Viloo marum (*Egla Marmelos*).  
 2. Nulla baloosoo, Nulla baloosoo, Burra munja (*Cantium parviflorum*).  
 Jujuba, 2nd sort, Pala raigoo, Dordhea beer, Yelandri (*Zizyphus jujuba*).  
 2. Jany. 3. Janee. 4. Janee.  
 2. Neroodee, 2nd sort. 3. Chinna neroodee. 4. Neroodee.  
 2. Billoo, or satin wood. 3. Billoo. 4. Hill dawra (*Chloroxylon Swietenia*).  
 2. Konda erookee. 3. Koonda erookee. 4. Jungly gorei.  
 2. Muskaka jhar. 4. Muske'ka thar.  
 Indian dammer wood, Googlam, Ghooglat, Koon-gillium (*Chloroxylon dupada*).  
 Rose-apple wood, No. 1. Pedda nerooodoo, Burra jamoon, Peroo naga (*Eugenia jambolana*).  
 Rose-apple wood, No. 1. Sunna nerooodoo, Paee jamoon, Siroo naga (*Eugenia jambolana*).  
 Yalama wood, Yelama. 4. Dhawra.  
 Jujube wood, No. 1. Pedda raigoo. 4. Sooa beer (*Jujube, Zizyphus jujuba*).  
 Mooshtee, Mooshtee, Bachla, Moottee (*Strychnos nux vomica*).  
 Myrobalan chebulic, Karaka, kharuraa, kadookace (*Terminalia chebula*).  
 Peah, saul, or yengasee. 3. Yagasee. 4. Peah saul.  
 Mahul wood. 4. Mohul.  
 Dhourah wood. 3. Dhowar.  
 Swam wood. 3. Swamoo kurra.

From Hill Tracts of Orissa.

2. Kendoo manjaw, or Abbes. Ebony.  
 Bandum wood. 3. Bandanum.  
 Kungrah wood.  
 Species of ebony, called Toomekachava. 3. Toome-kachava kurra. 5. Kakatatee (*Diospyros ebenaster*).  
 Sissoo wood. 3. Yekereehava kurra. 4. Seesoo (*Dalbergia Sissoo*).  
 Dammer wood. 3. Googlama kurra (*Fatica*).  
 Panerapah wood, or red wood. 3. Maha nambo.  
 Goomoodoo wood. 3. Goomoodoo kurra.  
 Tadah wood. 3. Tadda kurra. 5. Kakatatee.  
 Somedah wood, Somida kurra. 4. Somida (*Swietenia shrifoga*).  
 Yegaseh wood. 3. Yegasee kurra, Peah saloo. 5. Vengay marum (*Pterocarpus marsupium*).  
 Bokkum wood; a die used mostly in making goolal (*Cassipouia sappan*).

From Cuddapah.

Red-sunders wood. Chendanum, Chanda soorkh (Sega-poo chandanum). (*Pterocarpus Santalinus*).  
 Tamarind wood, Chinta kuna, Nulee, Pooleya marum (*Tamarindus Indica*).  
 Erythroxyton, Deva darce, Deo dharee, Deva tharum (*Erythroxyton areolatum*).  
 Yadaa, Vadessa. 4. Warsa.  
 Pehis jany, Pidda jancee. 4. Burce jancee.  
 Cheekrahee, Chickrahee, Cheekrahee, Seekram.  
 3. Sunna erookee, Chotee gonee, Sina naree vellam (*Cordia myra*).  
 3. Ooroo percekee, Sahree gonci, Peroo nance vellam, (*Cordia*).

Black polkee, Nulla polkee. 4. Siah polkee.  
 White polkee, Tella polkee. 4. Suffaid polkee.  
 Nameluddoojoo, Nemece laddoojoo. 4. Junglee shaumbaloo.  
 Glomerous fig-tree, Medee, Gol leer, Attee marum (*Ficus glomerata*).  
 Poplar-leaved fig-tree, Ravee, Peepal, Arasa (*Ficus religiosa*).  
 Wild poplar-leaved fig-tree, Konda ravee, Jungle Peepul, Kat arasin.  
 Gopee, Gopee. 4. Gopee.  
 Emblie myrobalan, Oosarica, Amlah, Toopoo nellee (*Phyllanthus Emblica*).  
 Black emblie myrobalan, Nulla oosarica, Siah amlah, Neelee kadambo (*Phyllanthus Emblica*).  
 Bunka thada, Bunka thada, Baktra.  
 Rudra kadapa, Rudra Cuddapah, Roodra kurpah.  
 But cadapa, Buttoo Cuddapah, But kurpa.  
 Kearnee, Kearnee. 4. Khernee.  
 Duntha, Duntha. 4. Bekul.  
 Waved-leaved fig-tree, Joovee, Jovee, Kall alun (*Ficus infectoria*).  
 Vangueria spinosa, Pedda munga. 4. Bangaree keelakree (*Vangueria spinosa*).  
 Sarapappoo, Chara, Cheronjee kaghar sarai.  
 Soonkasoola, Soonkesooloo, Sunkesar kel akree, Vadee naramin.  
 Rusty soap nut, Koopoodoo, Reeh, Manee poongum (*Sapindus rubiginosa*).  
 Woody Dalbergia, Kanooga, Kuny, Poongum (*Dalbergia arborea*).  
 Thandra, Tandra, Tandra, Tanee (*Terminalia bellerica*).  
 Elephant, or wood-apple, Veluga kurra, Kowcet vella marum (*Feronia elephantum*).  
 Wild wood-apple, Konda vallaga, Junglee Kowcet Kaloo Vellam (*Feronia elephantum*).  
 Narva, Narava. 4. Nawikelahree.  
 Pedda tapasee, Pidda tapasee. 4. Baree tapasee.  
 Beekee, Bikee. 4. Bikkee.  
 Jergubee, 3 sorts, Raigoo, Jungle beer, Yelandai (*Jujube Zizyphus jujuba*).  
 Palavardnee, or Relay wood, Palava renoo, Doro heci kelakree, Veppallai (*Wrightia antidysenterica*).  
 Auray, Aree. 4. Aree.  
 Goothee, Goothee. 4. Gootheeree.  
 Corivee, Korivee, Korvee.  
 Mimosa sami, Jammee, Jaumbee, Vannee, Mimosa suma.  
 Pedda neeroodee, Pidda neeroodee, Burra neeroodee.  
 Clearing-nut tree, Chilla ginga, Chill binjore Naumbore narombal, Taitan (*Strychnos potatorum*).  
 Kurra pakoo, Kurra pah, Kurra vipin (*Bergera Kanigii*).  
 Wild mango, Konda marindee, Jungle arm, Katoo maitlarum (*Spondias mangifera*).  
 3. Nara mamaidee. 4. Junglee rai and Dorrake waste (*Tetranthera monopetala*).  
 Poplar-leaved Hibiscus, or Tulip-tree, Gengaramin kurra, Paris kajhar (young wood), Poorsum marum (*Hibiscus populneus*).

From Northern Circars.

Goompana wood. 3. Goompana kurra (*Oilina wodier*).  
 Ganara wood. 2. Ganara kurra. 3. Ganaroo kurra.  
 Wood-apple wood, Valaga kurra, Krowcet, Vella marum (*Feronia elephantum*).  
 Nulla muddi wood, Nulla muddi kurra. 5. Caroo maroodum (*Pentaptera tomentosa*).  
 Tella muddi wood, Tella muddi kurra, Vel maroodum marum (*Pentaptera glabra*).  
 Tangada wood, Tangadu kurra. 5. Auvarai marum (*Cassia auriculata*).  
 Paya wood. 3. Paya kurra.  
 Annen wood, Annen kurra.  
 Togaru wood, Togara kurra (*Morinda citrifolia*).  
 Red dye wood, 1st sort, Vizianagrum Zemindary.  
 Red dye wood, 2nd sort. Ditto.  
 Boorooga wood, Buruga kurra (*Bombax Malabaricum* or *heptaphyllum*).

Induga wood, Induga kurra. 5. Thaethan marum (*Strychnos potatorum*).  
 Nuckaroo wood, Nukkera kurra (*Cordia myxa*).  
 Tabica wood, Tolica kurra.  
 Tellavoolemara wood. 3. Tellovoolemara kurra.  
 Nullavoolemara wood, Nullaveloomara kurra (*Diospyros chloroxylon*).  
 Vulture wood, Vulture kurra (*Mimosa cinerea*).  
 Bodda wood, Bodda kurra (*Ficus racemosa*).  
 Voodaga wood.  
 Lolooga wood, Lolooga kurra (*Pterospermum heynei*).  
 Gungarane wood, Gungarane kurra. 5. Poo varasa marum (*Thespesia populnea*).  
 Aguste wood (*Eschynomene grandiflora*).  
 Bandita wood, Bandita kurra (*Erythrina Indica*).  
 Soap-nut, or Koonkoodoo wood, Koonkoodoo kurra (*Sapindus emarginatus*).  
 Camoonya wood, Kumooga marum.  
 Doduga wood.  
 Cumba wood, Cumbakurra.  
 Goomoodoo wood, Goomoodoo kurra.  
 Unkoodoo wood, Unkoodoo kurra.  
 Undooroo wood, Undooroo kurra.  
 Iscarawsee wood, Iscarawsee kurra.  
 Ghantha wood, Ghantha kurra.

From Coimbatore.

Black wood. 5. Irrooppootoo marum (*Dalbergia latifolia*).  
 Vangay wood. 3. Vana kurra (*Pterocarpus marsupium*).  
 Curry murdah wood. 5. Karai maroodoo marum (*Terminalia glabra*).  
 Sadachoor, or Thadasoo wood. 5. Sadaichee marum (*Grewia tiliaefolia*).  
 Purrambay wood. 5. Parumbai marum (*Prosopis spicigera*).  
 Vadu coornie wood. 5. Vadungoorany marum (*Bignonia xylocarpa*).  
 Toarattie wood, Toarathe marum, *Capparis divaricata*. (*Casuarina equisetifolia*).  
 Neer cadumbay wood, Neer cadumbai marum (*Nauclea parviflora*).  
 Munja cadumbay wood. 5. Manjull cadumbai marum (*Nauclea cordifolia*).  
 Woonga wood. 5. Woonga marum (*Acacia amara*).  
 Currengally wood. 5. Caroongaly marum (*Acacia Sundra*).  
 Pinnay wood. 3. Ponna kurra. 5. Pinnai marum (*Dillenia pentagyna*).  
 Pilla murdoo wood. 5. Pilla maroodoo (*Terminalia chebula*).  
 Ugay wood, Ooku marum (*Salvadora persica*).  
 Curry vangay wood. 5. Caroo vangai marum (*Acacia odoratissima*).  
 Vel vaila wood. 5. Vel Velan marum (*Acacia leucophlœa*).  
 Nunjoonda wood. 5. Nunjoonda marum (*Balanites Egyptiaca*).  
 Allum vildoo wood. 5. Allum vildoo (*Ficus Indica*).  
 Vellaytoarattie wood, Vellaitoarattie (*Capparis grandis*).  
 Mavoolinga wood, Mavoolinga marum (*Cratæva Roxburghii*).  
 Erovaloo wood, Irrovaloo marum (*Inga xylocarpa*).  
 Corkapully wood, Cadookapooly marum (*Inga dulcis*).  
 Ayah wood. 5. Ayah marum (*Ulmus integrifolia*).  
 Kalli milk hedge wood. 5. Kalli (*Euphorbia tirucalli*).  
 Peru wood. 3. Pethawkoo kurra. 5. Peroo marum (*Ailanthus excelsa*).  
 Yellah culley wood. 5. Yellai kullie (*Euphorbia neriiifolia*).  
 Putchalay wood. 5. Putchalai marum (*Dalbergia paniculata*).  
 Eetcha wood, or Date wood. 5. Eetcha marum (*Phœnix sylvestris*).  
 Cocoa-nut wood, Golbaree kurra, Narel, Thenna marum (*Cocos nucifera*).  
 Moorkoo wood. 5. Moorookoo marum (*Erythrina Indica*).

Paroonjoly wood. 5. Paroonjoly marum (*Hymenodictyon utile*).  
 Moolloo vangay wood, Moolloo vanai marum (*Briedelia spinosa*).  
 Vellay naga wood. 3. Tella nareedoo kurra. 5. Vella naga marum (*Conocarpus latifolia*).  
 Eichie wood. 5. Eichie marum (*Ficus tsiela*).  
 Nawel wood. 3. Naredon kurra. 5. Nawel marum (*Eugenia caryophyllifolium*).  
 Woodoogoo wood. 5. Woodoogoo marum (*Chrytea collina*).  
 Acacia. Areca-nut, or Camoogoo wood. 5. Camoogoo marum.  
 Anny curry wood. 5. Annaikarai marum (*Odina wodier*).  
 Kurkutta wood. 5. Kurkutta marum (*Zizyphus yelundai*).  
 Vel vangay wood. 5. Vel vangay marum (*Acacia speciosa* or *flexuosa*).  
 Vellay murdah wood, Vellai murdoo (*Terminalia berryi*).  
 Munjay pavutay wood. 5. Munja pavuttai (*Moriada citrifolia*).  
 Furniture woods grown in Pinang or Prince of Wales Island, sent by Singapore Committee:—Siam wood. Ebony. Wild Durian. Uncertain. Angsena wood. Guava wood. Kamuning. Senna Baymah or Angsena. Mirlimoh, two kinds. Baloh. Baloh Bunga. Root of Betelnut tree. Root of Cocoanut tree. Clove wood. Root of Eboeh tree. Timbusu. Siam wood. Timbusu. Baloh. Baloh Bungah. Ranggalas. Pinang wood. Kulim. Baloh. Ibool wood.  
 Lingoa wood, or the Amboyna wood of commerce, from Ceram in the Moluccas. It was imported in considerable quantities into Great Britain during the period in which the Moluccas were British possessions. This wood, which is very durable and capable of a high polish, is abundant at Ceram, New Guinea, and throughout the Molucca Seas. It can be obtained in any quantity if the precaution is taken of ordering it during the previous trading season. The Kayu Buka of commerce is the knarled excrescence of this tree. Presented by Messrs. Almeida and Sons, of Singapore, the importers.  
 Lingoa wood, from Ceram. A circular slab, 6 feet 7 inches in diameter. These large circular slabs are obtained by taking advantage of the spurs which project from the base of the trunk, as the tree itself has not sufficient diameter to furnish such wide slabs. They are occasionally met with as large as 9 feet, but the usual size is from 4 to 6 feet. Presented by Messrs. Almeida and Sons, of Singapore.  
 Kayu Buka, from the Moluccas. This wood is obtained from the knotty excrescences which are found on the stems of the Lingoa tree. It is brought to Singapore by the Eastern traders from Ceram, Arru and New Guinea, and is sold by weight. It is much esteemed as a fancy wood.  
 Useful woods of the Malay Peninsula:—Bintangor wood. In general use for planks, masts, and spars; in fact it holds the same position in the Straits as the pine in America. It exists in the greatest abundance around Singapore, and is exported to the Mauritius and to California:—Kledang. Biliang. Changis. Klat. Timbusu. Kayu Brombong. Angsanah. Tampinis. Tanpang. Kranji. Slumar. Simpoh Bukit. Krantai. Kamuning. Simpoh Ryah. Merbow. Medansi Miniak. Ditto, Buah Yeah. Ditto, Konit. Ditto, Kitanaban. Ditto, Tandoh. Bilon Wangi. Jambu-Ayer-Utan. Peragah. Kayu Arang. Leban. Ranggalas. Bras-bras.  
 Glam. The glam tree furnishes a paper-like bark used in caulking the seams of vessels.  
 Poolai wood used as floats for fishing nets.  
 Sandal wood. The island of Timor is the only place which produces it in the Archipelago in any quantity.  
 Sapan wood, from Siam and the Philippine Islands. Furnishes a red dye, and is, in fact, the logwood of the Archipelago. Exported in large quantities to Europe.  
 The growth of Singapore:—Knee timber. Merbow wood. Seventy specimens of timber.

Canes, reeds, and grasses, from Singapore Committee:—  
Cane walking sticks from Malacca and Sumatra, as cut from the jungle previous to being subjected to the process of smoking, which gives them their rich brown tint.

Ditto six varieties thereof.

Canes and sticks of kinds from Cochin.

Bamboos from the jungles in the vicinity of Calcutta.

Bamboos from the Tenasserim provinces:—*Bambusa spec.*, *Bambusa gigantea*, *Bambusa stricta*, *Bambusa spec.*, *Calamus angustifolia*, *Calamus fasciculatus*, and five other species.

*Calamus rotang*, used in making rattan chairs, &c.

*Saccharum sp.*, used by natives instead of quills to write with.

*Arundo karka*, used in preparing hookah snakes.

*Cyperus tegetum*, employed in making mats.

*Khus-khus* or scented grass, from Ulwar in the states of Rajpootanah.

*Phrynium dichotomum*, *Settulputtee*, of which the finest mats are made; grown in the district of Chittagong.

(I.) *Miscellaneous Substances.—Vegetable Kingdom.*

*Mishmee bih*, *Bih booteah*, poisons for poisoning arrows, from Bengal.

Twigs, used as tooth brushes (*Trophis aspera*), from Bengal.

*Sapindus emarginatus*, Soap nut, from Madras.

Soap nut, *Kunkude kaya*, from Vizagapatam.

Another kind of soap nut (*Mimosa abstergens*), from Calicut and Madras.

Clearing nut (*Strychnos potatorum*), from Madras.

*Animal Substances used as Food, or in the preparation of Food.*

Preserved hump of the East Indian ox, from India. (J. Clarkson, 171 Strand.)

Fish paste, two jars, from Arrakan.

Sharks' fins (punk), from Rao of Cutch, Arrakan, Tenasserim, Malacca, and Manilla, used in China as an article of food.

Shark's fins (Cutch). These are exported to Bombay for re-exportation to China.

Shark's fins (Bombay). What are exported from Bombay are chiefly imported from other countries.

Isinglass, prepared by Mr. Scott, of the Hon. East India Company's Dispensary, presented by Dr. M'Clelland.

Fish maws, isinglass (ohola), from Rao of Cutch, Tenasserim, Sumatra. Fish maws from Cutch are exported to Bombay for re-exportation to China.

Fish maws (Bombay). What are exported from Bombay are chiefly imported from other countries.

Edible birds' nests, 1st quality, from Sambawa, east of Java, and from Java. The nests of the *Hirundo esculenta*, collected chiefly in the limestone caverns of the south coast of Java, and the islands of the eastward as far as Arru, near New Guinea; highly esteemed for their supposed nutritious and restorative properties.—From Singapore.

Edible birds' nests, 2nd quality, from Borneo; 3rd quality, from Borneo and from Tenasserim.

Trepang, or edible sea slug (*Beche de Mer*), from Borneo. Collected in large quantities throughout the Indian Archipelago, especially among the eastern islands, for the China market.—From Singapore.

The other varieties are *Lotong*, *Buangkulil*, and *Pandang*.

Honey, from Beerbhoom and the Cossya Hills.

*Animal Substances used in Medicine and in the Arts.*

Musk, in pod and in grains; Nepal pods in a bamboo bottle, from Assam.

Musk, ambergris, and civit, are usually supplied to Bombay, from Aden.

Blistering beetle (*Mylabris cichoria*; *Meloe trianthema*).

Elytra, or beetle wings. From Dr. C. Huffnagle.

The beetle. The elytra, or beetle wings. Garlands made from the elytra. Muslin, as ornamented with the elytra.

*Wool, Hair, Bristles, and Whalebone.*

Camel's wool, and camel's hair cloth.

Sheep's wool (Sindh). A small specimen only from Sindh was supplied. The piece of brown woollen cloth is stated to have been made from it.

Wool, from Rao of Cutch. About a sixteenth part of the wool produced in Cutch is stated to be used for home consumption, and the rest exported to Bombay.

White and black twisted and untwisted wool, from Rajah of Bickaneer.

Wool (Assan and Chusmas wool), from Rajah of Jesselmere.

One maund of sheep's wool, Bengal.

Specimens of sheep's wool and goats' down, from Ladak, obtained by Lieut. Strachey, B.E.

Wool (Bal), Jang-bal (Nakpo), black, Highland wool.

Yunibu (Highland), lambs' wool.

Rong-bal (Karpo), white, valley wool.

Jung-bal (Karpo), white, Highland wool.

Goats' down; Tibetan (Lena and Kulu), Turkish (Tibbit), Persian (Kashm), and Hindostanee (Pashm).

Lena karpo (Kalchak), white goats' down, picked.

Lena nakpo (Kalchak), dark goats' down, picked.

Tibbit Yarkhendi, goats' down from Yarkend; Tibbit

Khotani, goats' down from Khoté; Tibbit Turfani, goats' down from Turfan.—Provinces of Chinese Turkey.

Kulu, yaks' down.

Tsos-kul, down of the "tsos" antelope, and a piece of the animal's skin.

Wild boar, elephant, and porcupine bristles.—Madras.

*Silk from the Silk-worm, and other species in India.*

4480 cocoons, from Bhagulpore.

Areah cocoons, from Assam.

Raw tusseh silk (*Saturnia mylitta*), from Bhagulpore.

Raw silk, 1½ seers, and 1 skein wild silk, from Arrakan.

Mazankooree (thread) lata, and Areah lata, from Assam.

Raw silk, Areah silk, Moongha silk, 12 kinds, from Assam.

Coloured raw silk, from vicinity of Calcutta.

Raw silk, from Azingurh, Nepal, and Mysore.

*Tussur (or Tusseh), Eri, Moonga, and Pat Silk.*

*Saturnia Mylitta (Tussur)*, feeds upon the *Terminalia catappa* and *Zizyphus jujuba*. Eggs and caterpillar; cocoons; silk; cocoons from which the moth has escaped; the moth, male and female; and one piece of Tussur cloth, made at Midnapore.

*Bombyx Saturnia (Moonga)*, feeds upon the *Zizyphus jujuba* and *Terminalia catappa*. Eggs and caterpillar; cocoons; silk; moth, male and female; and one piece of Moonga cloth, made in Assam.

*Phalæna Cynthia (Eri)*, feeds upon the *Ricinus communis*. Eggs and caterpillar; cocoons; silk; moth, male and female; and one piece of Eri cloth, made in Assam.

*Bombyx Mori (Pat)*, feeds upon the mulberry. Eggs and caterpillar; cocoons; silk; moth, male and female; and one piece of cloth, made in Assam.

A specimen of the *Saturnia Atlas*, and coloured drawings of the *Terminalia catappa*, *Zizyphus jujuba*, and *Ricinus communis*. The property of Dr. Charles Huffnagle.

Raw silk:—Four varieties from Messrs. J. and R. Watson's manufacture, Surdah filature. The silk has been obtained from Bengallee or Desee worms, which feed on mulberry leaves or toot plant. Four varieties from Mr. W. Macnair's manufacture in the Joradah filature. The silk has been obtained from Nistry and Desee worms, feeding on mulberry leaves; it is the produce of the November bund, and made from small yellow cocoons.—Assorted in a case and contributed by D. Jardine, Esq., of Calcutta.

Raw silk:—Two varieties from Rakhaldoss Mookerjee's manufacture, Cossim bazar filature. The silk has been obtained from Nistry worms, which feed on mulberry leaves. Two varieties from Bahary Laul, Mookerjee's manufacture, Cossim bazar filature. The silk has been obtained from Nistry worms feeding on mulberry leaves.

Two varieties from Degumber Mitre's manufacture, Cosim bazar filature. The silk has been obtained from Bengallee or Desce worms, which are bred and reared from the beginning of October to the middle or close of November, and are fed on the tender shoots of the mulberry plants. One variety from C. R. Jennings, Esq.'s manufacture, Galimpore filature. The silk is obtained from Bengallee or Desce worms, which feed on mulberry plants or *Toot past*; the produce and colour of the cocoons are generally better from mulberry grown in strong clay soil.—Assorted in a case, and contributed by D. Jardine, Esq., of Calcutta.

Raw silk:—Manufactured by Messrs. V. and S. M. Vardon, Soogapoor, of eight cocoons of the rainy bund.—From the Calcutta list.

#### Feathers, Down, Fur, and Skins.

White and black ostrich feathers, from Aden.  
Manufactures of feathers by the natives, raw feathers, boas, tippets, artificial flowers, from Dr. C. Huffnagle.  
Boas, tippets, victorines, &c., from the down of the young *Ciconia argala*, collected at Commercilly.  
Cranes' white feathers, from Arrakan and Tenasserim.  
Tails of the yak, or *Bos grunniens*.  
Chouries, from Arrakan.  
Black tiger skins, from Madras, Calicut.  
Antelope skins, from Rajah of Patteala.  
2 leopard skins, 3 tiger skins, 1 spotted deer skin, 1 white or tawed deer skin, 2 fawns, from Bengal, from G. C. Cheap, Esq.  
100 Bengal deer skins, from Patna.  
50 buffalo hides, 100 goat skins, 50 cow hides, from Bengal.  
Two squirrels and two lizards.  
Deer skin, otter skin, jowmalah skin, squirrel skin, kooteah skin, from Assam—Baboo Deenanath.  
Brown bear skin.  
2 pieces of fish skins, 8 specimens of kingfishers' skins, from Arrakan.  
Raw and tanned skins of elk, buffalo, bull, tiger, cheeta, wild cat, goat, sheep, deer, elephant, bison.—Madras.

#### Bone, Horn, Hoofs, Ivory, &c.

Horn tips. Deer and buffalo horns, with skulls and without. Wild Mython cow's head, complete. Mountain sheep's head. Takin's head. Singphoo cow's head, Mishmee. Singphoo cows' heads, without skulls, three pairs.—Assam, Captain Smith and Mr. W. S. Hudson.  
Two buffalo horns.—Tenasserim Provinces.  
Buffalo and deer horns, from interior. Rhinoceros horns, from Zanzibar. These are imported at Bombay, from the eastern coast of Africa, Zanzibar, and the Somali coast; they are then re-exported to China for making cups and ornaments. The one sent is the double horn of the *Rhinoceros Africanus*.  
Two nielgai horns, and rhinoceros horn.—Moulmein, Tenasserim Provinces.  
Horns of bison, buffalo, elk, antelope, deer (one pair).—Madras.

#### Scientific Names of Horns and Skins from India.

The gour (*Bos [bibos] cavifrons*), Hodgson; (*Bos gourus*), Hamilton Smith.  
The arnee (*Bos [bubalus] arna*), Hodgson.  
The bárah sinha (*Cervus [bucervus] elaphoides*), Hodgson; (*Cervus dawaucellii*), G. Cuvier.  
The sámber (*Cervus [rusa] hippelaphus*), Cuvier.  
The kaker, or barking deer (*Cervus [muntjacus] vaginalis*), Boddart.  
The axis (*Axis maculata*).  
The thar (*Capricornis bubalina*), Hodgson.  
The hog deer (*Axis porcinus*), Zimmerman.  
The rassor, or roosh (*Ovis polii*), Blyth.  
Flying squirrel (*Saurus petaurista*), Palls.  
Takin (*Bridorcas savigola*), Hodgson.  
Elephants' tusks.—Tenasserim Provinces.  
Elephant's tusk.—Nepal.  
Elephants' tusks, and hippopotamus' teeth, Somali Coast.—Aden.

Elephant's tusks.—Madras.

Bundle of Mergui tortoise-shell.

Shell of the hawk's-bill turtle, Sulu Islands. The tortoise-shell of commerce, from Singapore.

Mother-of-pearl shell, Arru Islands and Sulu.

#### Pearls, &c.

349 seed pearls.—Kurrachee, *vid* Scind and Bombay.

These seed pearls are from the fishing at Kurrachee. They are small and of little value, except with those who esteem them as a medicine, to wit, the Persians and some of the Hakeems of India.

Pearl-oysters were not procured at Kurrachee before the times of Meer Moorad Ali Khan. They were obtained in this manner (Bombay Report):—

The oysters come up to the shore at high water. When the tide fell, there they remained, and Coolies were employed for the occasion; who gathered them up, put them in boats, and landed them all at Keemaroo Point. There the shells were broken, and the pearls extracted, under the orders of the contractors, who paid the Tulpore Government a yearly sum for the pearl contract; at first, only 500 rupees per annum were paid, but after a time, 40,000 rupees were given for the same period. Now, even Government sell yearly the right of sifting the shells in search of any pearls that may still remain.

Fresh-water pearls, with their shells.—Moorshedabad.

27 Mergui pearls.

Bundle of pearl oyster-shells.—Tenasserim.

Shells from Zanzibar, *vid* Bombay.

Bombay shells (so called in India): these are imported from Zanzibar in large quantities, and are stated to be exported to England, or to the Mediterranean for cameos. The specimens sent are those of *Cassis rufa*.

Cowries, cyprei, imported from the Maldivé Islands, and current as money in India.

#### Oils, Tallow, Wax, and Lard.

Bengal tallow.

Bees'-wax, 13 seers 12 chek.—Bhagulpora.

Bees'-wax, three varieties, from Borneo.

The bee of the Indian Archipelago does not make its nest in hives, as in Europe, but suspends it from the branch of a tree, in which position they may be seen forming masses of considerable bulk. Certain trees become favourites, and are selected by them, year after year, for many generations, although often disturbed by the taking of their nests. These trees become private property among the Eastern tribes, and are handed down from father to son.

#### Glue, Isinglass, and Gelatine.

Isinglass from *Polynemus plebeius*, v. supra.

*Polynemus plebeius*; the fish yielding Bengal isinglass, from Dr. Walker.

Fish, called chuppa, yielding isinglass.—Arrakan.

#### Lac.

Glass case, containing illustrations of the process of lac manufactures. The lac insect, young. Stick-lac, seed-lac, lac dye, shell-lac, sealing-wax, shell-lac ornaments.—Dr. C. Huffnagle.

Stick-lac, and a kind of lac.—Calcutta.

Seed-lac, one maund.—Bhagulpora.

Shell-lac, of the kind called bala, and of the kind called chanuk.—Beerbhoom.

Lac from off the Peepul-tree (*Ficus religiosa*); and off the ban, or Indian fig-tree (*Ficus indica*); and off the bere, or *Zizyphus jujuba*.

Stick-lac, on twigs of *Mimosa abstergens* and *Ficus religiosa*.—Malabar, *vid* Bombay.

Stick lac: this is imported at Bombay, from Sindh; also brought from the Southern Mahratha country, and most parts of Western India, for re-exportation to China and England.

Gum-lac.—Singapore.

Raw lac.—Ganjam.

Stick-lac and seed-lac.—Bengal.

Lac dye, 1 maund 10 seers.—Bengal.

MISCELLANEOUS COLLECTION of MINERAL, VEGETABLE, and ANIMAL SUBSTANCES useful in Medicine and the Arts, made by Dr. ROYLE, in the Bazaars of the Bengal Presidency; with some additions from Dr. FALCONER (F.), obtained in Cashmere, and others from Dr. STOCKS (H.), procured by him in the Bazaars of Scinde. The collection is interesting, as containing most of the useful products of India, besides enabling us to identify many of the substances which were known to the Arabs as well as to the Greeks, as the author has endeavoured to show in his works, "Essay on the Antiquity of Hindoo Medicine," and "Illustrations of Himalayan Botany."

## ROOTS.

| No. | —                                 | Synonyms.                  | Places whence Obtained.      | Scientific Names, &c.                      |
|-----|-----------------------------------|----------------------------|------------------------------|--------------------------------------------|
| 1   | Aboo Khulas . . . . .             | Rutunjot . . . . .         | Mooltan . . . . .            | Alkanet?                                   |
| 2   |                                   | Rutunjot . . . . .         |                              | Lithospermum?                              |
| 3   | Aboo Kanus . . . . .              |                            | Roum.                        |                                            |
| 4   | Atees butees . . . . .            |                            | Kedarkanta . . . . .         | Aconitum heterophyllum.                    |
| 5   |                                   | Bish, 2nd . . . . .        | Guzerat.                     |                                            |
| 6   |                                   | Tirayamen . . . . .        | Caubul.                      |                                            |
| 7   | Atees, F. . . . .                 |                            | Kedarkanta.                  |                                            |
| 8   | Uzkheer . . . . .                 | Mirchia gund . . . . .     | India . . . . .              | Andropogon, camel's hay.                   |
| 9   | Azkhar, St. Izkeer.               |                            |                              |                                            |
| 10  | Urkoh? Arkuree . . . . .          | "Ree," or "Maroee"         | Scinde.                      |                                            |
| 11  | Urloo . . . . .                   | Tat burunga . . . . .      | India, Dehli . . . . .       | Bignonia indica.                           |
| 12  | Asaroon . . . . .                 | Tuggur . . . . .           | Hills . . . . .              | Viola sp., substitute for Asarum Europeum. |
| 13  | Tugur F. substitute.              |                            |                              |                                            |
| 14  | Afemedoon . . . . .               |                            | Dehli, Surat . . . . .       | Epithymum.                                 |
| 15  | Iskeel . . . . .                  |                            | India . . . . .              | Scilla indica.                             |
| 16  | Asgund . . . . .                  | Nagouree . . . . .         | India . . . . .              | Physalis flexuosa.                         |
| 17  | Asgund . . . . .                  | Hatras . . . . .           | Mirzapore.                   |                                            |
| 18  | Akurkura . . . . .                |                            | Dehli . . . . .              | Anthemis pyrethrum.                        |
| 19  | Amba huldee . . . . .             |                            | Arabia . . . . .             | Curcuma.                                   |
| 20  | Urnduryan . . . . .               |                            | Arabia.                      |                                            |
| 21  | Anarvohi . . . . .                |                            |                              |                                            |
| 22  | Unteleh Souda . . . . .           | Nirbisee dukhunc . . . . . | Umritseer . . . . .          | An Aconitum?                               |
| 23  | Unteleh Souda . . . . .           |                            |                              | Aconitum Ferox.                            |
| 24  | Unjbar roomee . . . . .           |                            |                              | Bistort or Snake-wood.                     |
| 25  | Unjbar, St. . . . .               |                            |                              |                                            |
| 26  | Unjbar . . . . .                  |                            | Cashmere?                    |                                            |
| 27  | Aveel Kusmeeree . . . . .         |                            |                              |                                            |
| 28  | Aal, F. . . . .                   |                            |                              | Morinda citrifolia.                        |
| 29  | Ayrsean, St. . . . .              |                            |                              | Orris-root.                                |
| 30  | Barahce Kund . . . . .            |                            | Caubul.                      |                                            |
| 31  | Beeja Sar, F. . . . .             |                            |                              | Acorus Calamus.                            |
| 32  | Bidaree Kund . . . . .            | Sural cheep . . . . .      | Gunga ke kadir . . . . .     | Hedysarum tuberosum.                       |
| 33  | Bidhara . . . . .                 |                            |                              |                                            |
| 34  | Burkuk Shirazee . . . . .         |                            | Surat.                       |                                            |
| 35  | Bekh Atrilal . . . . .            |                            |                              |                                            |
| 36  | Burmooloo? . . . . .              |                            |                              |                                            |
| 37  | Bisfaij . . . . .                 |                            | Caubul . . . . .             | Polypodii, sp.                             |
| 38  | Bisfaij, F. . . . .               |                            | Caubul.                      |                                            |
| 39  | Biskhupra . . . . .               |                            | India . . . . .              | Trianthema pentandra.                      |
| 40  | Bilsekund . . . . .               |                            |                              |                                            |
| 41  | Bunufsha . . . . .                |                            | Cashmere and Hills . . . . . | Viola repens.                              |
| 42  | Bozedjan . . . . .                |                            | Surat.                       |                                            |
| 43  | Buehmun soorhk . . . . .          |                            | Caubul.                      |                                            |
| 44  | Buehmun suffed . . . . .          |                            | Surat.                       |                                            |
| 45  | Buehmun suffed, F. . . . .        |                            | Iran.                        |                                            |
| 46  | Buehmun suffed, St. . . . .       | Dehli . . . . .            | Scinde . . . . .             | White Bahman.                              |
| 47  | Buehmun suffed . . . . .          |                            | Bengal.                      |                                            |
| 48  | Bish . . . . .                    |                            |                              | Aconitum ferox.                            |
| 49  | Bish . . . . .                    | Kala koot . . . . .        | Umritseer.                   |                                            |
| 50  | Bish, 2nd specimen . . . . .      |                            | Peshawur.                    |                                            |
| 51  | Pukhan bed . . . . .              |                            | Himalayas . . . . .          | Saxifraga ligulata.                        |
| 52  | Pelijeree, F. . . . .             |                            |                              | Thalictrum.                                |
| 53  | Puroona . . . . .                 |                            |                              |                                            |
| 54  | Pokhur mool . . . . .             |                            | Dehli, Guzerat, Umritseer.   |                                            |
| 55  | Pecaranga . . . . .               |                            |                              |                                            |
| 56  | Tal moolie . . . . .              |                            |                              | Curculigo orchoides.                       |
| 57  | Toorbud . . . . .                 | Rusot . . . . .            | India . . . . .              | Convolvulus turpethum.                     |
| 58  | Mishmee Toeta . . . . .           |                            |                              | Copis Tecta.                               |
| 59  | Jalapa . . . . .                  |                            | Dehli Bazaar . . . . .       | Convolvulus Jalapa.                        |
| 60  | Jamghas . . . . .                 |                            | Surat via Dehli . . . . .    | An Polypodii sp.                           |
| 61  | Judwar . . . . .                  | Nirbisee, 2nd . . . . .    | Umritseer.                   |                                            |
| 62  | Judwar . . . . .                  |                            |                              |                                            |
| 63  | Judwar, St. . . . .               |                            |                              | Zedoary.                                   |
| 64  | Juntecana . . . . .               |                            | Caubul . . . . .             | Gentian.                                   |
| 65  | Juntecana 2nd . . . . .           |                            | Surat via Dehli.             |                                            |
| 66  | Chirya kund . . . . .             |                            | Cashmere via Dehli.          |                                            |
| 67  | Chob Cheence . . . . .            |                            | Poorub . . . . .             | Smilax china.                              |
| 68  | Chaya . . . . .                   |                            |                              |                                            |
| 69  | Chok . . . . .                    |                            | Umritseer . . . . .          | Orris-root sp.                             |
| 70  | Hanzil . . . . .                  |                            |                              | Cucumis colocynthis.                       |
| 71  | Khirkuk, substitute for . . . . . |                            |                              | Hellebore.                                 |
| 72  | Khus khus . . . . .               | Punnee . . . . .           | India . . . . .              | Andropogon muricatum.                      |
| 73  | Khunjuk, St. . . . .              |                            |                              |                                            |



| No. | —                                | Synonyms.                  | Places whence Obtained.   | Scientific Names, &c.                            |
|-----|----------------------------------|----------------------------|---------------------------|--------------------------------------------------|
| 74  | Salep hindee.                    |                            |                           |                                                  |
| 75  | Salep misree.                    |                            |                           |                                                  |
| 76  | Salep misree, F.                 |                            | Saharunpore . . . .       | <i>Eulophia campestris</i> .                     |
| 77  | Salib misree . . . .             | Khoosyut ool Salib . . . . | Caubul . . . . .          | Orchideae.                                       |
| 78  | Khusyeet ool Salib, 2nd          |                            | Poorub.                   |                                                  |
| 79  | Kholinjan . . . . .              |                            |                           | <i>Alpinia Galanga</i> .                         |
| 80  | Dar huld . . . . .               |                            | Himalayas . . . . .       | <i>Berberis Asiatica</i> .                       |
| 81  | Doorunaj Akabee . . . .          | Utees? . . . . .           |                           | <i>Doronicum pardalianches?</i>                  |
| 82  | Dantun, F. . . . .               | Jumulgotta kejur . . . .   |                           | <i>Croton Tiglium</i> .                          |
| 83  | Doodhee . . . . .                |                            |                           | <i>Euphorbia tristes</i> .                       |
| 84  | Doodhee . . . . .                |                            |                           | <i>Euphorbia tristes</i> .                       |
| 85  | Rawa, St. . . . .                |                            |                           | Prepared Turmeric.                               |
| 86  | Rawund . . . . .                 |                            | Himalayas . . . . .       | <i>Rheum Emodi</i> .                             |
| 87  | Rewund Khutai . . . . .          |                            |                           | <i>Rheum sp.</i>                                 |
| 88  | Rewund Chenee, F. . . .          |                            | Nujeebabad.               |                                                  |
| 89  | Rewund Chenee, St. . . .         |                            |                           |                                                  |
| 90  | Rataloo, F. . . . .              |                            |                           | <i>Rheum Ribes Dioscorea</i> .                   |
| 91  | Pesha Khutmee, F. . . .          |                            |                           |                                                  |
| 92  | Zurawund taveel . . . .          |                            | Cashmere. . . . .         | <i>Aristolochia longa</i> .                      |
| 93  | Zurawund gird or mood-<br>chruj. |                            | Cashmere. . . . .         | <i>Aristolochia rotunda</i> .                    |
| 94  | Zurawund Moodechruj.             |                            |                           |                                                  |
| 95  | Zurunbad . . . . .               | Kuchoor . . . . .          |                           | <i>Curcuma Zerumbad</i> .                        |
| 96  | Zurunbad.                        |                            |                           |                                                  |
| 97  | Kuchoor, F. and St. . . .        | Dot.                       |                           |                                                  |
| 98  | Zunjbeel . . . . .               | South . . . . .            |                           | <i>Zingiber officinale</i> .                     |
| 99  | Ada . . . . .                    |                            | Himalayas . . . . .       | Green ginger.                                    |
| 100 | Salsa . . . . .                  |                            | Surat.                    |                                                  |
| 101 | Sutawur . . . . .                |                            | Nujeebabad . . . .        | <i>Asparagus ascendens</i> .                     |
| 102 | Sutawur suffed . . . . .         |                            | Dehli.                    |                                                  |
| 103 | Suttee . . . . .                 | Kupoor kuchoor . . . . .   | Dehra and Khalsee . . . . | <i>Globba sidhouol</i> .                         |
| 104 | Saad . . . . .                   | Motha . . . . .            | Guzerat . . . . .         | <i>Cyperus rotundus?</i>                         |
| 105 | Saad, 2nd . . . . .              |                            | Dehli . . . . .           | <i>Cyperus rotundus</i> .                        |
| 106 | Cyperus, Saad . . . . .          | Nagur motha . . . . .      |                           | <i>Cyperus juncifolius?</i>                      |
| 107 | Sunbul Balchur . . . . .         | Jatamansi . . . . .        | Himalayas . . . . .       | <i>Nardostachys Jatamansi</i> .                  |
| 108 | Soombul? Sunpat?                 |                            |                           |                                                  |
| 109 | Sorinjan shereen . . . .         |                            | Surat . . . . .           | <i>Colechicum illyricum?</i>                     |
| 110 | Sorinjan, F. . . . .             |                            |                           |                                                  |
| 111 | Sorinjan tulkh . . . . .         |                            | Caubul.                   |                                                  |
| 112 | Satheea, F. . . . .              |                            | Saharunpore.              |                                                  |
| 113 | Soos . . . . .                   | Mulethee . . . . .         |                           | Liquorice Root.                                  |
| 114 | Sosun . . . . .                  | Eersa . . . . .            | Caubul . . . . .          | Orris Root.                                      |
| 115 | Set Burwa, F. . . . .            |                            |                           |                                                  |
| 116 | Serab, F. . . . .                |                            |                           |                                                  |
| 117 | Sheebae . . . . .                | Jur ooad . . . . .         | Surat . . . . .           | <i>Phaseolus Max. radiatus</i> .                 |
| 118 | Shakakel.                        |                            |                           |                                                  |
| 119 | Shakakel misree . . . . .        |                            | Egypt?                    |                                                  |
| 120 | Gajur misree . . . . .           |                            | Peshawur.                 |                                                  |
| 121 | Shakakul . . . . .               |                            | Cashmere.                 |                                                  |
| 122 | Shakakul . . . . .               |                            | Cashmere.                 |                                                  |
| 123 | Shakakul . . . . .               |                            | Cashmere.                 |                                                  |
| 124 | Shuojun.                         |                            |                           |                                                  |
| 125 | Shogun mentri.                   |                            |                           |                                                  |
| 126 | Sheeturuj . . . . .              | Cheeta . . . . .           |                           | <i>Plumbago Zeylanica</i> .                      |
| 127 | Songhia.                         |                            |                           |                                                  |
| 128 | Turasees.                        |                            |                           |                                                  |
| 129 | Akurkura . . . . .               | Kurkura . . . . .          | Calcutta . . . . .        | <i>Anthemis pyrethrum</i> .                      |
| 130 | Aruk ool Sufr huldee . . .       | Jaola huldee . . . . .     | Poorub.                   |                                                  |
| 131 | Aruk ool Sufr . . . . .          |                            |                           | Turmeric <i>Curcuma longa</i> .                  |
| 132 | Umba huldee.                     |                            |                           |                                                  |
| 133 | Umba huldee.                     |                            |                           |                                                  |
| 134 | Huldee.                          |                            |                           |                                                  |
| 135 | Huldee . . . . .                 |                            | Bengal.                   | <i>Curcuma species</i> .                         |
| 136 | Huldee.                          |                            |                           |                                                  |
| 137 | Puharee huldee.                  |                            |                           |                                                  |
| 138 | Puharee huldee, F.               |                            |                           |                                                  |
| 139 | Poombee huldee.                  |                            |                           |                                                  |
| 140 | Moela huldee . . . . .           |                            | Poorub.                   |                                                  |
| 141 | Huldee.                          |                            |                           |                                                  |
| 142 | Fawania . . . . .                | Ood Salub . . . . .        | Arabia . . . . .          | <i>Pœonia corallina</i> .                        |
| 143 | Pipula Mool . . . . .            | Filfil moorbel . . . . .   |                           | <i>Piper longum</i> .                            |
| 144 | Filfil moorbel . . . . .         |                            | Poorub.                   |                                                  |
| 145 | Fooh . . . . .                   | Munjeeth . . . . .         |                           | <i>Rubia Munjeet</i> .                           |
| 146 | Munjeet . . . . .                |                            | Arabia . . . . .          | <i>Rubia tinctorum</i> .                         |
| 147 | Koot . . . . .                   | Costus of ancient . . . .  | Cashmere . . . . .        | <i>Aucklandia Costus</i> , series of F<br>coner. |
| 148 | Koot, St. . . . .                |                            |                           |                                                  |
| 149 | Koot shereen.                    |                            |                           |                                                  |
| 150 | Koot tulhh . . . . .             |                            | Muritsur.                 |                                                  |
| 151 | Koost? . . . . .                 | Poongee.                   |                           |                                                  |
| 152 | Koolun . . . . .                 |                            | Surat . . . . .           | Columba.                                         |
| 153 | Kala bichwa . . . . .            |                            | Lucknow . . . . .         | <i>Polypodii sp.</i>                             |
| 154 | Kamruj . . . . .                 |                            | Poorub . . . . .          | Felix.                                           |
| 155 | Kana kuchoo . . . . .            |                            |                           | Truffles.                                        |
| 156 | Kibbur . . . . .                 |                            | Caubul . . . . .          | <i>Capparis spinosa?</i>                         |

| No. | —                       | Synonyms.             | Places whence Obtained. | Scientific Names, &c.           |
|-----|-------------------------|-----------------------|-------------------------|---------------------------------|
| 157 | Kibbur (bark of root).  |                       |                         |                                 |
| 158 | Kutol . . . . .         | . . . . .             | Dehli.                  |                                 |
| 159 | Bekh Kurfa . . . . .    | . . . . .             | Caubul . . . . .        | <i>Apium graveolens.</i>        |
| 160 | Kurroo . . . . .        | . . . . .             | Hills . . . . .         | <i>Gentiana.</i>                |
| 161 | Kissar Kejur . . . . .  | . . . . .             | Saharunpoor . . . . .   | <i>An Cissus.</i>               |
| 162 | Kuseroo . . . . .       | . . . . .             | Dehli . . . . .         | <i>Cyperus tuberosus.</i>       |
| 163 | Kukora . . . . .        | . . . . .             | India . . . . .         | <i>Momordica muricata.</i>      |
| 164 | Banj Kukora.            |                       |                         |                                 |
| 165 | Koonduah . . . . .      | . . . . .             | . . . . .               | Apparently, <i>Costus.</i>      |
| 166 | Koothee.                |                       |                         |                                 |
| 167 | Kurkee pona kejur.      |                       |                         |                                 |
| 168 | Keer.                   |                       |                         |                                 |
| 169 | Guj peepul . . . . .    | . . . . .             | Himalayas . . . . .     | <i>Pothos scandens.</i>         |
| 170 | Gushoona.               |                       |                         |                                 |
| 171 | Giloh . . . . .         | . . . . .             | India . . . . .         | <i>Memispermum condifolium.</i> |
| 172 | Gunmatoree.             |                       |                         |                                 |
| 173 | Gorkhe pan.             |                       |                         |                                 |
| 174 | Loofa . . . . .         | . . . . .             | Surat . . . . .         | <i>Atropa Mandrogam.</i>        |
| 175 | Mazrioon . . . . .      | . . . . .             | . . . . .               | <i>Daphne mezereon.</i>         |
| 176 |                         |                       |                         |                                 |
| 177 | Mahmيران . . . . .      | . . . . .             | Cashmere . . . . .      | <i>Ranunculus ficaria?</i>      |
| 178 | Mahmيران Khutai.        |                       |                         |                                 |
| 179 | Mahmيران (different).   |                       |                         |                                 |
| 180 |                         |                       |                         |                                 |
| 181 | Moghas . . . . .        | Muedi lukri . . . . . | . . . . .               | <i>Tetranthera.</i>             |
| 182 | Muleem . . . . .        | . . . . .             | Himalayas.              |                                 |
| 183 | Moosli suffed . . . . . | . . . . .             | Gwalior.                |                                 |
| 184 | Mooslee (another kind). |                       |                         |                                 |
| 185 | Moosli suffed . . . . . | Sawbul . . . . .      | India . . . . .         | <i>Bembax heptaphyllum.</i>     |
| 186 | Moosli siah.            |                       |                         |                                 |
| 187 | Moosli siah Dukhnee.    |                       |                         |                                 |
| 188 | Moosli siah, St.        |                       |                         |                                 |
| 189 | Bekh mhuk.              |                       |                         |                                 |
| 190 | Neergundi . . . . .     | . . . . .             | Dehli.                  |                                 |
| 191 | Nisoth, F.              |                       |                         |                                 |
| 192 | Nur Kuchoor.            |                       |                         |                                 |
| 193 | Wuj . . . . .           | Bach . . . . .        | Khorassan . . . . .     | <i>Acorus Calamus.</i>          |

## WOODS.

|     |                          |                                    |                  |                                |
|-----|--------------------------|------------------------------------|------------------|--------------------------------|
| 194 | Bardust abnoos . . . . . |                                    | India . . . . .  | Ebony.                         |
| 195 | Beejesar . . . . .       | Bijuk . . . . .                    | Dukhun.          |                                |
| 196 | Bookum . . . . .         | Puttung(sappan wood).              |                  | <i>Cesalpinia sappan.</i>      |
| 197 | Pudmak . . . . .         | . . . . .                          | Deyrah . . . . . | <i>Prunus Puddum.</i>          |
| 198 | Tejbul . . . . .         | . . . . .                          | Hills . . . . .  | <i>Xanthoxylon aromaticum.</i> |
| 199 | Deodar . . . . .         | . . . . .                          |                  | <i>Pinus deodara.</i>          |
| 200 | Sundul abiuz . . . . .   | Sundul suffed (white sandal wood). | Dukhun . . . . . | <i>Santalum album.</i>         |
| 201 | Sundul ahmur . . . . .   | Rukut chundoun (red sandal wood).  | Poorub . . . . . | <i>Pterocarpus santalinus.</i> |
| 202 | Ood . . . . .            | Ood hindee . . . . .               | Hatras . . . . . | <i>Aloesylon Agallochum.</i>   |
| 203 | Ood . . . . .            | Agur (aloes wood, eagle wood).     | . . . . .        | <i>Aquilaria Agallocha.</i>    |

## BARKS.

|     |                           |                     |                             |                                |
|-----|---------------------------|---------------------|-----------------------------|--------------------------------|
| 204 | Ukl Beer . . . . .        | Ikl beer . . . . .  | Poorub . . . . .            | <i>Datisca cannabina.</i>      |
| 205 | Burkuk Shirazee . . . . . | . . . . .           | Surat.                      |                                |
| 206 | Bharungee . . . . .       | . . . . .           | Almora . . . . .            | <i>Betula Bhojputra.</i>       |
| 207 | Bhoj puttra.              |                     |                             |                                |
| 208 | Bhumbel . . . . .         | . . . . .           | Himalayas . . . . .         | <i>Euonymus tingens.</i>       |
| 209 | Tejbul . . . . .          | . . . . .           | Himalayas . . . . .         | <i>Xanthoxylon aromaticum.</i> |
| 210 | Dar Cheenee . . . . .     | Cinnamon . . . . .  | Poorub . . . . .            | <i>Laurus cinnamomum.</i>      |
| 211 | Dar Sheeshan . . . . .    | Kuephul . . . . .   | Himalayas . . . . .         | <i>Myrica sapida.</i>          |
| 212 | Roo, St.                  |                     |                             |                                |
| 213 | Sut peora . . . . .       | Boorans . . . . .   | Foot of Himalayas . . . . . | <i>Rhododendron arboreum.</i>  |
| 214 | Tuj . . . . .             | Saleekhee . . . . . | Nujibabad . . . . .         | <i>Laurus cassia?</i>          |
| 215 | Sunna.                    |                     |                             |                                |
| 216 | Ooshk chal.               |                     |                             |                                |
| 217 | Kirfae . . . . .          | . . . . .           | Furruckabad.                |                                |
| 218 | Koorchee.                 |                     |                             |                                |
| 219 | Koora . . . . .           | . . . . .           | Kheree Pass . . . . .       | <i>Echites.</i>                |
| 220 | Kunhar kapost.            |                     |                             |                                |
| 221 | Kayree, St.               |                     |                             |                                |
| 222 | Kheree chips, St.         |                     |                             |                                |
| 223 | Lulka.                    |                     |                             |                                |
| 224 | Lodh . . . . .            | . . . . .           | Himalayas . . . . .         | <i>Symplocos racemosa.</i>     |
| 225 | Musag, bark of Akhroot.   | Walnut.             |                             |                                |
| 226 | Mueda lakree . . . . .    | Chandrem . . . . .  | Almorah . . . . .           | <i>Tetranthera apetala.</i>    |

## FLOWERS.

| No. | —                       | Synonyms.                        | Places whence Obtained. | Scientific Names, &c. |
|-----|-------------------------|----------------------------------|-------------------------|-----------------------|
| 384 | Ukleel ool jibbul . . . | . . .                            | Delhi Surat . . .       | Acacia Arabica.       |
| 385 | Babool.                 | . . .                            | . . .                   | . . .                 |
| 386 | Babooneh . . . . .      | . . .                            | Smyrna . . . . .        | Chamomile flowers.    |
| 387 | Bukoombur . . . . .     | . . .                            | India . . . . .         | Careya arborea.       |
| 388 | Bunufsuj . . . . .      | . . .                            | Cashmere . . . . .      | Viola.                |
| 389 | Bol ke phool.           | . . .                            | . . .                   | . . .                 |
| 390 | Booree, St. . . . .     | Made from pollen of<br>bullrush. | . . .                   | . . .                 |
| 391 | Tesoo, F. . . . .       | . . .                            | . . .                   | Butea frondosa.       |
| 392 | Julnar . . . . .        | Goolanar . . . . .               | India . . . . .         | Punica granatum.      |
| 393 | Gool Khueeroo, F.       | . . .                            | . . .                   | . . .                 |
| 394 | Dha . . . . .           | . . .                            | . . .                   | Grislea tomentosa.    |
| 395 | Zafaran . . . . .       | . . .                            | Saffron . . . . .       | Crocus sativus.       |
| 396 | Seotee.                 | . . .                            | . . .                   | . . .                 |
| 397 | Gooli Ghafis, F.        | . . .                            | . . .                   | . . .                 |
| 398 | Gooli Ghafis.           | . . .                            | . . .                   | . . .                 |
| 399 | . . . . .               | . . .                            | Safflower.              | . . .                 |
| 400 | Gool soorukh, F.        | . . .                            | . . .                   | . . .                 |
| 401 | Goontnee.               | . . .                            | . . .                   | . . .                 |
| 402 | Gao Zuban.              | . . .                            | . . .                   | . . .                 |
| 403 | Moondhee . . . . .      | . . .                            | . . .                   | Sphæranthus indicus.  |
| 404 | Nagkesur . . . . .      | Nar mooshk . . . . .             | . . .                   | Mesua ferrea.         |
| 405 | Neelofer . . . . .      | . . .                            | . . .                   | Nymphœa alba.         |

## FRUITS AND SEEDS.

|     |                            |                                 |                                  |                                |
|-----|----------------------------|---------------------------------|----------------------------------|--------------------------------|
| 406 | Aarghees.                  | Zirishk . . . . .               | Hills . . . . .                  | Berberis Chitra.               |
| 407 | Ubhool . . . . .           | Hooper, Huber . . . . .         | St. Umritseer . . . . .          | Juniper berries.               |
| 408 | Ubhool.                    | . . .                           | . . .                            | . . .                          |
| 409 | Ooturuj . . . . .          | Bijuoree neemboo . . . . .      | Gardens . . . . .                | Citron.                        |
| 410 | Usul . . . . .             | Furas . . . . .                 | India . . . . .                  | Tamarix dioica.                |
| 411 | Usluk . . . . .            | . . .                           | India . . . . .                  | Vitea trifolia.                |
| 412 | Oojas . . . . .            | Aloo Bokhara . . . . .          | Caul and Cashmere . . . . .      | Priunus Bokhariensis.          |
| 413 | . . . . .                  | Alu Chumra, St. . . . .         | Khorassan . . . . .              | Acid plum.                     |
| 414 | Ujmood . . . . .           | Arub ujwain . . . . .           | India . . . . .                  | Ptychotis ajowan.              |
| 415 | Ajwain . . . . .           | . . .                           | From Dr. Christison.             | . . .                          |
| 416 | . . . . .                  | Nan Khoonah.                    | . . .                            | . . .                          |
| 417 | Ajowan or Wull Tan, St.    | . . .                           | . . .                            | . . .                          |
| 418 | Ehreez . . . . .           | Kusoomba ke kuen . . . . .      | India . . . . .                  | Carthamus tinctorius.          |
| 419 | Ukhburoos . . . . .        | Kul-gehoon . . . . .            | Hills and Khadir,<br>Chilkhana.  | Coix indica.                   |
| 420 | Aruz . . . . .             | Birunj . . . . .                | Doab Canal . . . . .             | Oryza sativa.                  |
| 421 | . . . . .                  | Var. Bansmutti . . . . .        | Doab Canal.                      | . . .                          |
| 422 | . . . . .                  | Birinj Peshawvee, St.           | . . .                            | . . .                          |
| 423 | . . . . .                  | Himalayan rice.                 | . . .                            | . . .                          |
| 424 | . . . . .                  | Bansmutti.                      | . . .                            | . . .                          |
| 425 | Aruz, Birunj Pers. . . . . | Chanwul, Dhan . . . . .         | . . .                            | Rice.                          |
| 426 | Azarakee . . . . .         | Koochla . . . . .               | India, Poorub . . . . .          | Strychnas nux vomica.          |
| 427 | Urjan . . . . .            | . . .                           | . . .                            | Hill apricot.                  |
| 428 | As. and St. . . . .        | . . .                           | Cashmere . . . . .               | Myrtus communis.               |
| 429 | Asartursh . . . . .        | Dana . . . . .                  | Bussorah.                        | . . .                          |
| 430 | Ufrunjuh . . . . .         | . . .                           | Dehli and Caubul . . . . .       | Urtica.                        |
| 431 | Ukut mukut . . . . .       | Kutkurenja Kurenjwa . . . . .   | India . . . . .                  | Cæsalpinia bonducella.         |
| 432 | Ukleel ool mulik . . . . . | . . .                           | Caubul . . . . .                 | Melilot.                       |
| 433 | . . . . .                  | Allspice . . . . .              | Calcutta Bazaar . . . . .        | Allspice.                      |
| 434 | Ummoghelan . . . . .       | Keckur . . . . .                | . . .                            | Acacia farnesiana.             |
| 435 | Umluj . . . . .            | Aonla, Emblica my-<br>robolans. | . . .                            | Phyllanthus emblica.           |
| 436 | Unbuj . . . . .            | Anab, umchoor . . . . .         | India . . . . .                  | Unripe fruit, dried.           |
| 437 | Amchou . . . . .           | . . .                           | Bengal.                          | . . .                          |
| 438 | Unjidan . . . . .          | . . .                           | Surat <i>via</i> Dehli . . . . . | Ferula assafœtida.             |
| 439 | . . . . .                  | Dookoo . . . . .                | Arabia.                          | . . .                          |
| 440 | Indjan . . . . .           | . . .                           | . . .                            | . . .                          |
| 441 | . . . . .                  | St. Hingotey jo pur . . . . .   | . . .                            | Assafœtida?                    |
| 442 | Unjidan, 2nd . . . . .     | . . .                           | Saharunpore Surat.               | . . .                          |
| 443 | Unjidan, F. . . . .        | . . .                           | Astoria in Tibet . . . . .       | Narthex assafœtida.            |
| 444 | Sir T. McNeill's . . . . . | . . .                           | Herat.                           | . . .                          |
| 445 | Oudung, St. . . . .        | . . .                           | . . .                            | An urtica?                     |
| 446 | Ootungun, F. . . . .       | . . .                           | . . .                            | . . .                          |
| 447 | Unjereh.                   | . . .                           | . . .                            | . . .                          |
| 448 | Anesoon . . . . .          | Aniseed . . . . .               | Caubul . . . . .                 | Applied to apium petroselinum. |
| 449 | . . . . .                  | . . .                           | Bengal . . . . .                 | Aniseed.                       |
| 450 | Anesoon, F. . . . .        | . . .                           | Umritseer.                       | . . .                          |
| 451 | Anesoon, F. . . . .        | . . .                           | Caubul.                          | . . .                          |
| 452 | Aneson . . . . .           | . . .                           | . . .                            | Pimpinella involucrata.        |
| 453 | Anoola . . . . .           | . . .                           | India . . . . .                  | . . .                          |
| 454 | Ooafenoos . . . . .        | . . .                           | Surat.                           | . . .                          |

| No. | —                                  | Synonyms.                   | Places whence Obtained.     | Scientific Names, &c.             |
|-----|------------------------------------|-----------------------------|-----------------------------|-----------------------------------|
| 455 | Ootungun . . . . .                 | . . . . .                   | Lucnow.                     |                                   |
| 456 | Ootungun.                          | . . . . .                   |                             |                                   |
| 457 | Unteh mora. . . . .                | . . . . .                   |                             | Helicteres.                       |
| 458 | Oonga . . . . .                    | . . . . .                   | India . . . . .             | Achyranthes aspera.               |
| 459 | Ahlub . . . . .                    | . . . . .                   | Surat.                      |                                   |
| 460 | Ahleluj bijwara . . . . .          | Hura zurd. . . . .          | India . . . . .             | Terminalia                        |
| 461 | Hurra takee . . . . .              | . . . . .                   | Dr. Christison.             |                                   |
| 462 | Ahleluj Kaboolee . . . . .         | . . . . .                   | Caubul.                     |                                   |
| 463 | Ahleluj Behera, F. . . . .         | . . . . .                   |                             | Terminalia.                       |
| 464 | Ahleluj Behra? . . . . .           | . . . . .                   |                             |                                   |
| 465 | Ahleluj usfur . . . . .            | . . . . .                   | India . . . . .             | Terminalia chebula.               |
| 466 | Ahleluj uswnd . . . . .            | . . . . .                   |                             | Terminalia chebula.               |
| 467 | Ahleluj uswud, juwa, hure<br>juwa. | . . . . .                   |                             |                                   |
| 468 | Oorud chulaka, F.                  | . . . . .                   |                             |                                   |
| 469 | Oorud seeah.                       | . . . . .                   |                             |                                   |
| 470 | Babchee and F.                     | . . . . .                   |                             | Psoralea corylifolia.             |
| 471 | Bawurchee, St.                     | . . . . .                   |                             |                                   |
| 472 | Badam Chenee . . . . .             | . . . . .                   |                             | Arachis hypoga.                   |
| 473 | Badrooj . . . . .                  | . . . . .                   | Furuckabad . . . . .        | Ocimum?                           |
| 474 | Badinjan . . . . .                 | . . . . .                   | India . . . . .             | Egg plant. Solanum melangena.     |
| 475 | Maroo Banjun, F. . . . .           | . . . . .                   |                             |                                   |
| 476 | Bedian Khutai . . . . .            | . . . . .                   | China . . . . .             | Star anise, Illicium anisatum.    |
| 477 | Bartung.                           | . . . . .                   |                             |                                   |
| 478 | Bakla . . . . .                    | . . . . .                   |                             | Bean, Faba vulgaris.              |
| 479 | Bakla . . . . .                    | . . . . .                   | Gardens . . . . .           | Bean, Faba vulgaris.              |
| 480 | Bakla, sem.                        | . . . . .                   |                             | Dolichos sp.                      |
| 481 | Bakla . . . . .                    | Shirazee.                   |                             |                                   |
| 482 | Sem . . . . .                      | . . . . .                   | Bengal.                     |                                   |
| 483 | Bakla misree . . . . .             | Kuml ghutta . . . . .       |                             | Nelumbium speciosum.              |
| 484 | Bakloom . . . . .                  | . . . . .                   | Bengal . . . . .            | Careya?                           |
| 485 | Balungoo . . . . .                 | . . . . .                   | India . . . . .             | Dracocephalum Royleanum.          |
| 486 | Balbeej, St.                       | . . . . .                   |                             |                                   |
| 487 | Baebhungar . . . . .               | . . . . .                   | India . . . . .             | Vitex.                            |
| 488 | Bucheh tirak . . . . .             | . . . . .                   | Bengal.                     |                                   |
| 489 | Birunj Kaboolee . . . . .          | Bee bhirung . . . . .       | Nujjibabad . . . . .        | Embelia ribes.                    |
| 490 | Beibarung.                         | . . . . .                   |                             |                                   |
| 491 | Buryana . . . . .                  | Khurentee . . . . .         |                             | Seda.                             |
| 492 | Buzr Katoona . . . . .             | . . . . .                   | India, Gardens . . . . .    | Plantago Isufghol.                |
| 493 | Buzr, F. . . . .                   | Ispagol . . . . .           | Dehli.                      |                                   |
| 494 | Bisbaseh . . . . .                 | . . . . .                   |                             | Mace, Myristica Moschata.         |
| 495 | Bistitaj . . . . .                 | . . . . .                   | Delhi.                      |                                   |
| 496 | Buteekh hindee . . . . .           | Turbooz . . . . .           |                             | Water Melon, Cucurbita citrullus. |
| 497 | Buloot . . . . .                   | . . . . .                   |                             | Quercus.                          |
| 498 | Buloot . . . . .                   | Shah Buloot, St. . . . .    |                             | Quercus.                          |
| 499 | Buloot . . . . .                   | . . . . .                   | Surat, Acorns . . . . .     | Quercus.                          |
| 500 | Nimoorea Bukayee, St.              | . . . . .                   |                             | Melia Bukayun.                    |
| 501 | Biladur . . . . .                  | Bhilanwa . . . . .          |                             | Semecarpus Anacardium.            |
| 502 | Hub Balsan, St.                    | . . . . .                   |                             | Balsamodendron.                   |
| 503 | Hub ool Balsan . . . . .           | . . . . .                   |                             | Balsamodendron Gileadense         |
| 504 | Boon, F. . . . .                   | Kuhwah . . . . .            |                             | Coffee, Coffea Arabica.           |
| 505 | Buleluj . . . . .                  | Behera . . . . .            | India . . . . .             | Terminalia Bellerica.             |
| 506 | Bunj . . . . .                     | Ujwin Khorassanee . . . . . | Dehli . . . . .             | Hyoscyamus niger.                 |
| 507 | Benda Toree, F. . . . .            | . . . . .                   | Gardens, India . . . . .    | Hibiscus.                         |
| 508 | Bindal . . . . .                   | . . . . .                   | India . . . . .             | Momordica.                        |
| 509 | Binduk . . . . .                   | Finduk . . . . .            | Hills, Hazel Nut . . . . .  | Corylus lacera.                   |
| 510 | Binduk hindee . . . . .            | Reetha . . . . .            | India, Soap Nut . . . . .   | Sapindus detergens.               |
| 511 | Bomaderan . . . . .                | . . . . .                   | Surat, Dehli.               |                                   |
| 512 | Boomadur, St. . . . .              | Gen madur, St. . . . .      |                             | An Absinthium.                    |
| 513 | Boee . . . . .                     | . . . . .                   | Dehli.                      |                                   |
| 514 | Beej Band . . . . .                | . . . . .                   | Dehli.                      |                                   |
| 515 | Bel geeree . . . . .               | . . . . .                   |                             | Ægle Marmelos.                    |
| 516 | Belgeeree, St. . . . .             | Pulghur, Katturo.           |                             |                                   |
| 517 | Bol.                               | . . . . .                   |                             |                                   |
| 518 | Buengun junglee . . . . .          | . . . . .                   | Dehli . . . . .             | Solanum.                          |
| 519 | Bhung Puharee, F. . . . .          | Hemp seed . . . . .         | Teree, Himalaya . . . . .   | Cannabis sativâ.                  |
| 520 | Bhenjaree . . . . .                | . . . . .                   |                             | Zizyphus?                         |
| 521 | Padul . . . . .                    | . . . . .                   | India . . . . .             | Bignonia suaveolens.              |
| 522 | Loll Paluk, F. . . . .             | . . . . .                   |                             | Spinage.                          |
| 523 | Paluk, F. . . . .                  | . . . . .                   |                             |                                   |
| 524 | Phaphra, F. . . . .                | . . . . .                   |                             | Buckwheat.                        |
| 525 | Papecta . . . . .                  | . . . . .                   | St. Ignatius Bean . . . . . | Strychnos Ignatia.                |
| 526 | Purusphul . . . . .                | . . . . .                   |                             | Lagerstrœmia?                     |
| 527 | Pulas Papreh . . . . .             | . . . . .                   |                             | Butea frondosa.                   |
| 528 | Punwar . . . . .                   | Chukonda . . . . .          |                             | Cassia Tora.                      |
| 529 | Petha . . . . .                    | . . . . .                   | Indian Pumpkin . . . . .    | Cucurbita Pepo.                   |
| 530 | Petha, F. . . . .                  | . . . . .                   |                             |                                   |
| 531 | Phulwa . . . . .                   | . . . . .                   | Almora . . . . .            | Bassia butyracea.                 |
| 532 | Peloo . . . . .                    | . . . . .                   | Hansi . . . . .             | Capparis aphylla.                 |
| 533 | Pecaz . . . . .                    | . . . . .                   |                             | Onion, Allium cepa.               |
| 534 | Peepul . . . . .                   | Dar Filfil . . . . .        | Bengal . . . . .            | Piper longum.                     |
| 535 | Punir jo fotah, St.                | . . . . .                   |                             |                                   |
| 536 | Tal mookhana . . . . .             | . . . . .                   | India . . . . .             | Barleria longifolia.              |
| 537 | Tal mukhana.                       | . . . . .                   |                             |                                   |

| No. | —                              | Synonyms.                | Places whence Obtained.   | Scientific Names, &c.                     |
|-----|--------------------------------|--------------------------|---------------------------|-------------------------------------------|
| 538 | Siah Tal mokhana.              |                          |                           |                                           |
| 539 | Turboos, F.                    |                          |                           |                                           |
| 540 | Tuk marya.                     |                          |                           |                                           |
| 541 | Turyak, St.                    |                          |                           | Inside husk of Areca.                     |
| 542 | Pecaranga . . . . .            |                          | Bengal.                   |                                           |
| 543 | Tushmeezuj . . . . .           | Chaksoo . . . . .        | Deyra Dhoon . . . . .     | Cassia acacalis.                          |
| 544 | Toorunj . . . . .              |                          |                           | Citron rind.                              |
| 545 | Toorunj . . . . .              |                          |                           |                                           |
| 546 | Toormus . . . . .              |                          |                           | White lupin, <i>Lupinus albus</i> .       |
| 547 | Tumr . . . . .                 | Choochara . . . . .      |                           | Date, <i>Phoenix dactylifera</i>          |
| 548 | Tumr hindee . . . . .          |                          |                           | Tamarind, <i>Tamarindus indica</i> .      |
| 549 | Tuntereeh . . . . .            | Marwar . . . . .         | India . . . . .           | <i>Rhus parviflorum</i> .                 |
| 550 | Toree seeah . . . . .          | Kalee toree . . . . .    |                           |                                           |
| 551 | Toree ghia . . . . .           |                          | India . . . . .           | <i>Luffa acutangula</i> .                 |
| 552 | Toree tulkh . . . . .          | Kurwee toree . . . . .   |                           | <i>Luffa pentandra</i> .                  |
| 553 | Todree suffed . . . . .        |                          |                           | <i>Cheiranthus cheiri</i> .               |
| 554 | Todree soorkh, F. . . . .      |                          |                           | <i>Cheiranthus</i> .                      |
| 555 | Todri soorkh, St. . . . .      |                          |                           | Malva.                                    |
| 556 | Todree Zurd . . . . .          |                          | Caul, India . . . . .     | <i>Cheiranthus</i> .                      |
| 557 | Toreeah, F. . . . .            |                          |                           | Sinapis.                                  |
| 558 | Tor, F. . . . .                |                          |                           | <i>Cytisus Cajan</i> .                    |
| 559 | Toon, F. . . . .               |                          |                           | <i>Cedrela Toona</i> .                    |
| 560 | Thy gul . . . . .              |                          |                           |                                           |
| 561 | Teen . . . . .                 |                          | Caul . . . . .            | Fig, <i>Ficus Carica</i> .                |
| 562 | Tent . . . . .                 |                          |                           | <i>Capparis aphylla</i> .                 |
| 563 | Jamphul . . . . .              |                          | Surat . . . . .           |                                           |
| 564 | Jamun, F. . . . .              |                          |                           | <i>Eugenia</i> .                          |
| 565 | Jawarus . . . . .              | Bajra . . . . .          | India . . . . .           | <i>Panicum spicatum</i> .                 |
| 566 | Jurjur . . . . .               | Tirehtizak . . . . .     | India . . . . .           | <i>Moricandia tira</i> .                  |
| 567 | Jazur . . . . .                | Gagur . . . . .          |                           | Carrot, <i>Daucus Carota</i> .            |
| 568 | Jouz . . . . .                 | Ukhroot . . . . .        | Himalayas . . . . .       | Walnut, <i>Juglans regia</i> .            |
| 569 | Jouz ool suroo . . . . .       |                          | Hills . . . . .           | <i>Cupressus sempervirens</i> .           |
| 570 | Jouz ool Kitah . . . . .       |                          | Arabia . . . . .          | <i>Solanum</i> sp.                        |
| 571 | Jouz ool Kue . . . . .         | Muenphul . . . . .       |                           | <i>Posoqueria dumetorum</i> .             |
| 572 | Jouz ool Kue, F. . . . .       | Muenphul . . . . .       |                           | <i>Posoqueria</i> .                       |
| 573 | Jouz boa . . . . .             | Juephul . . . . .        | Spice Islands . . . . .   | Nutmeg, <i>Myristica moschata</i> .       |
| 574 | Jouz boa . . . . .             |                          |                           | Wild nutmeg, <i>Myristica tomentosa</i> . |
| 575 | Jouz roomee . . . . .          |                          | Surat . . . . .           | <i>Zizyphus</i> sp.                       |
| 576 | Jouz masil . . . . .           | Dhatoora . . . . .       | India . . . . .           | <i>Datura metel</i> .                     |
| 577 | Dhatora suffed . . . . .       |                          |                           |                                           |
| 578 | Jouz masil usrud . . . . .     | Kala dhatoora . . . . .  | India . . . . .           | Substitute for <i>Datura fastuosa</i> .   |
| 579 | Jeeapota . . . . .             |                          | India . . . . .           | <i>Nageia Putranjiva</i> .                |
| 580 | Chah . . . . .                 |                          | China . . . . .           | <i>Thea viridis</i> .                     |
| 581 | Chimoti suffed, St. . . . .    |                          |                           |                                           |
| 582 | Choolmoogra . . . . .          |                          |                           | <i>Choolmoogra odorata</i> .              |
| 583 | Hasha, F. . . . .              |                          |                           | Substitute for Thyme.                     |
| 484 | Hub ool Ban . . . . .          |                          | Surat ría Dehli . . . . . | <i>Melia sempervirens</i> .               |
| 585 | Hub ool Ban . . . . .          |                          |                           |                                           |
| 586 | Hub ool Khatra . . . . .       |                          |                           | <i>Pistacia terebinthus</i> .             |
| 587 | Hub ool Zulm . . . . .         | Hub Zalam, St. . . . .   |                           |                                           |
| 588 | Hub ool Sumneh . . . . .       |                          |                           | <i>Buchanania latifolia</i> .             |
| 589 | Hub ool Ghar . . . . .         |                          |                           | <i>Laurus nobilis</i> .                   |
| 590 | Hub ool Koolut . . . . .       |                          | Himalayas Cult. . . . .   | <i>Dolichos</i> .                         |
| 591 | Hub ool Koolkool . . . . .     |                          |                           | <i>Cardiospermum Halicacabum</i> .        |
| 592 | Hub ool mujjullub . . . . .    |                          | Almora . . . . .          | <i>Rhus</i> .                             |
| 593 | Hub ool neel . . . . .         |                          |                           | <i>Ipomœa cerulea</i> .                   |
| 594 | Hirf . . . . .                 | Halim . . . . .          |                           | <i>Lepidium sativum</i> .                 |
| 595 | Hoormul lahoree . . . . .      |                          |                           | <i>Peganum harmala</i> .                  |
| 596 | Hoormul . . . . .              | Ispund, F. . . . .       |                           | <i>Corchorus capsularis</i> .             |
| 597 | Hussuk . . . . .               | Gokroo Dukhune . . . . . |                           | <i>Petalium murex</i> .                   |
| 598 | Hussuk, 2nd . . . . .          | Gokhroo . . . . .        |                           | <i>Tribulus lanuginosus</i> .             |
| 599 | Hoolbeh . . . . .              | Methee . . . . .         |                           | <i>Trigonella fœnugræcum</i> .            |
| 600 | Himaz . . . . .                | Pulkee . . . . .         |                           | <i>Rumex undulatus</i> .                  |
| 601 | Gul Himaz, St. . . . .         |                          |                           |                                           |
| 602 | Gul Himaz, St. . . . .         |                          |                           |                                           |
| 603 | Humus abius . . . . .          | Chuna Kaboolee . . . . . |                           | <i>Cicer arietinum</i> .                  |
| 604 | Humus ahmur . . . . .          | Lal Chuna . . . . .      |                           | <i>Cicer arietinum</i> .                  |
| 605 | Kasnee . . . . .               |                          | India . . . . .           | Chicory, <i>Cicorium intybus</i> .        |
| 606 | Kasnee siah . . . . .          |                          | Surat . . . . .           |                                           |
| 607 | Hintch . . . . .               | Gehoon . . . . .         |                           | <i>Triticum hybernum et Æstivum</i> .     |
| 608 | Kakshee, St. . . . .           |                          |                           |                                           |
| 609 | Khoobanee, F. . . . .          |                          |                           | Dried apricots.                           |
| 610 | Hunzil, F. . . . .             | Andorain . . . . .       |                           | <i>Cucumis Colocynthis</i> .              |
| 611 | Khoob-bazee . . . . .          |                          |                           | Malva rotundifolia.                       |
| 612 | Khurbooz, F. . . . .           |                          |                           | <i>Cucumis melo</i> .                     |
| 613 | Post Khurbooz . . . . .        |                          |                           | Rind of melon.                            |
| 614 | Khoobeh, Khoob Kulan . . . . . |                          |                           | <i>Sinapis pusilla</i> .                  |
| 615 | Khirfee . . . . .              |                          |                           |                                           |
| 616 | Khurdul ræe . . . . .          |                          |                           | <i>Sinapis nigra</i> .                    |
| 617 | Khurnoob Shamee . . . . .      |                          | Carobs . . . . .          | <i>Ceratonja Siliqua</i> .                |
| 618 | Khurnoob noobtee . . . . .     |                          |                           | Cassia.                                   |
| 619 | Khiroa . . . . .               | Trundee . . . . .        |                           | <i>Ricinus communis</i> .                 |
| 620 | Khiroa, F. . . . .             | Arundee, F. . . . .      | India . . . . .           |                                           |
| 621 | Khus . . . . .                 | Kahor . . . . .          |                           | <i>Lactuca sativa</i> .                   |

| No. |                             | Synonyms.             | Places whence Obtained.            | Scientific Names, &c.                     |
|-----|-----------------------------|-----------------------|------------------------------------|-------------------------------------------|
| 622 | Khush Khush abiuz . . .     | Post . . . . .        | . . . . .                          | Papaver somniferum.                       |
| 623 | Khush Khush uswud . . .     | Huzara . . . . .      | . . . . .                          |                                           |
| 624 | Khunjuk, St.                |                       |                                    |                                           |
| 625 | Khutmee . . . . .           |                       |                                    | Athæa rosea.                              |
| 626 | Khilaf . . . . .            | Bed mooshk . . . . .  |                                    | Salix Ægyptiaca.                          |
| 627 | Khundroos . . . . .         | Mukkee . . . . .      | Indian corn . . . . .              | Zea Mays.                                 |
| 628 | Mukkee soorkh.              |                       |                                    |                                           |
| 629 |                             | Amultas . . . . .     |                                    | Cassia fistula.                           |
| 630 | Gool-i-dar cheenee, F.      |                       | Peshawur . . . . .                 | Cinnamomum aromaticum.                    |
| 631 | Darim . . . . .             | Naspal . . . . .      | Himalayas . . . . .                | Punica granatum.                          |
| 632 | Anak Danah, F. . . . .      |                       | Himalayas.                         |                                           |
| 633 | Darum . . . . .             |                       |                                    | Punica granatum.                          |
| 634 | Danuj abrooj . . . . .      |                       | Surat.                             |                                           |
| 635 | Dukhun . . . . .            |                       |                                    | Panicum miliaceum.                        |
| 636 | Dardab.                     |                       |                                    |                                           |
| 637 | Dund . . . . .              | Jumalgotta . . . . .  |                                    | Croton Tiglium.                           |
| 638 | Doodnee . . . . .           |                       |                                    | Euphorbia hirta.                          |
| 639 | Dhumuttur . . . . .         |                       |                                    | Clitoria ternatea.                        |
| 640 | Dak papra, F. . . . .       |                       |                                    | Batea frondosa.                           |
| 641 | Dek . . . . .               |                       |                                    | Zizyphus.                                 |
| 642 | Dookoo . . . . .            | Unjidan . . . . .     |                                    | Ferula, sp.                               |
| 643 | Unjidan . . . . .           |                       | Cashmere.                          |                                           |
| 644 |                             |                       | Cashmere.                          |                                           |
| 645 | Dookoo, F. . . . .          |                       | Delhi.                             |                                           |
| 646 | Dookoo, F. . . . .          |                       |                                    | Compositæ.                                |
| 647 | Dindana . . . . .           |                       | Umritseer, Peshawur.               |                                           |
| 648 | Dundanah . . . . .          |                       |                                    | Sorghum vulgare.                          |
| 649 | Zurt . . . . .              |                       | Fruit found along with the leaves. | Bertholletia ?                            |
| 650 | Ra sunna, F. . . . .        |                       |                                    |                                           |
| 651 | Ram putrec . . . . .        |                       | False mace. Picked .               | Myristica.                                |
| 652 | Ramputtree, St. . . . .     |                       | Bengal . . . . .                   | Often in a whole basket only broken mace. |
| 653 | Ranee . . . . .             |                       |                                    | Umbelliferæ.                              |
| 654 | Roodrachel . . . . .        |                       |                                    | Eleocarpus Ganitrus.                      |
| 655 | Ruwaseen . . . . .          | Jeret . . . . .       |                                    | Æschynomene Sesban.                       |
| 656 | Reez . . . . .              |                       |                                    |                                           |
| 657 | Zubeeb . . . . .            |                       |                                    | Raisins.                                  |
| 658 | Zubeeb ool jibbul . . . . . | Given for stavesacre. |                                    | Delphinium Staphisagria.                  |
| 659 | Zuhr mor . . . . .          |                       |                                    | Leguminosæ.                               |
| 660 | Zuhr, another kind.         |                       |                                    |                                           |
| 661 | Zuetoon . . . . .           |                       |                                    | Olea zytoon.                              |
| 662 | Saj . . . . .               |                       | India. Teak . . . . .              | Tectona grandis.                          |
| 663 | Sal . . . . .               |                       |                                    | Shorea robusta.                           |
| 664 | Saumach, F. . . . .         | Sauwak . . . . .      |                                    | Panicum.                                  |
| 665 | Sagoo Daneh . . . . .       |                       | Calcutta.                          |                                           |
| 666 | Sang . . . . .              |                       | Hansi.                             |                                           |
| 667 | Sapistan . . . . .          |                       |                                    | Cordia Myxa.                              |
| 668 | Sutab . . . . .             |                       |                                    | Ruta gravecolens.                         |
| 669 | Tookhm-i-sudab, F. . . . .  |                       | Caubul.                            |                                           |
| 670 | Tookhm-i-sudab, F. . . . .  |                       | Kabool.                            |                                           |
| 671 | Surshuf . . . . .           |                       |                                    | Sinapis dichotoma.                        |
| 672 | Surson . . . . .            |                       | Bengal.                            |                                           |
| 673 | Surwari . . . . .           |                       |                                    | Celosia argentea.                         |
| 674 | Sufur jul . . . . .         | Beh dana . . . . .    | Quince . . . . .                   | Pyrus cydonia.                            |
| 675 | Bih Dana.                   |                       |                                    |                                           |
| 676 | Saluk . . . . .             | Chookundur . . . . .  |                                    | Bete vulgaris.                            |
| 677 | Sumak . . . . .             | Kungnee . . . . .     |                                    | Panicum italicum.                         |
| 678 | Sumak . . . . .             | Toong . . . . .       | Hills . . . . .                    | Rhus.                                     |
| 679 | Soomak, 2nd . . . . .       |                       |                                    | Rhus coriaria.                            |
| 680 | Semsin Safaed . . . . .     | Til . . . . .         |                                    | Sesamum orientale.                        |
| 681 | Semsin . . . . .            | Til . . . . .         | Saharunpore.                       |                                           |
| 682 | Sumundur phul . . . . .     |                       |                                    | Barringtonia acutangula.                  |
| 683 | Sumundur phul . . . . .     |                       |                                    |                                           |
| 684 | Sumundur sokh . . . . .     |                       | Khadir.                            |                                           |
| 685 | Sun . . . . .               |                       |                                    | Hibiscus cannabinus.                      |
| 686 | Sunec-ke-beej.              |                       |                                    |                                           |
| 687 | Suna.                       |                       |                                    |                                           |
| 688 | Sinjud . . . . .            |                       | Cashmere . . . . .                 | Eleagnus sinjid.                          |
| 689 | Soomrakh . . . . .          |                       |                                    | Compositæ.                                |
| 690 | Soolfa . . . . .            |                       |                                    | Umbelliferæ.                              |
| 691 | Suns rooce . . . . .        |                       | Delhi . . . . .                    | Portulacea.                               |
| 692 | Singhara . . . . .          |                       |                                    | Trapa hispinosa.                          |
| 693 | Senf . . . . .              | Razecanuj . . . . .   |                                    | Pimpinella anisum.                        |
| 694 | Southee, F. . . . .         |                       | Saharunpore.                       |                                           |
| 695 | Sham Soondree, F.           |                       |                                    |                                           |
| 696 | Suhunja ke beej . . . . .   |                       |                                    | Hyperanthera moringa.                     |
| 697 | Seb . . . . .               |                       |                                    | Malus communis.                           |
| 698 | Seesaliyoon . . . . .       |                       |                                    | Umbelliferæ.                              |
| 699 | Semb, F. . . . .            |                       |                                    | Leguminosæ.                               |
| 700 | Send, F. . . . .            |                       | India . . . . .                    | Cucurbitaceæ.                             |
| 701 | Shakhun . . . . .           | Urhur . . . . .       |                                    | Cytisus bicolor.                          |
| 702 | Shakhun . . . . .           | Tor . . . . .         |                                    | Cytisus lajau.                            |
| 703 | Shaneh dushtee . . . . .    |                       |                                    | Sida indica.                              |

| No. | —                            | Synonyms.                   | Places whence Obtained.      | Scientific Names, &c.          |
|-----|------------------------------|-----------------------------|------------------------------|--------------------------------|
| 704 | Shahtureh, St.               |                             |                              |                                |
| 705 | Shair, F.                    | Juo . . . . .               | . . . . .                    | Barley.                        |
| 706 | Shah husfur . . . . .        | Rihan . . . . .             | . . . . .                    | Ocimum pilosum.                |
| 707 | Shubit . . . . .             | . . . . .                   | . . . . .                    | Anethum sowa.                  |
| 708 | Shubbo nak . . . . .         | Urloo . . . . .             | India . . . . .              | Bignonia indica.               |
| 709 | Shurbuttee . . . . .         | . . . . .                   | . . . . .                    | Oryzum?                        |
| 710 | Shureefa . . . . .           | . . . . .                   | . . . . .                    | Custard apple, Anona squamosa. |
| 711 | Shookakae.                   |                             |                              |                                |
| 712 | Shulgum . . . . .            | . . . . .                   | Turnip . . . . .             | Brassia rapa.                  |
| 713 | Shuogund . . . . .           | . . . . .                   | Himalayas.                   |                                |
| 714 | Shouneez . . . . .           | Kalonjee . . . . .          | . . . . .                    | Nigella indica.                |
| 715 | Zuur Satur, St.              |                             |                              |                                |
| 716 | Sunobur . . . . .            | Chilgoza and St. . . . .    | Himalayas . . . . .          | Pinus (Neoz) Gerardiana.       |
| 717 | Sundul soorkh . . . . .      | Ruckut chundun . . . . .    | . . . . .                    | Adenanthora pavonina.          |
| 718 | Adus . . . . .               | . . . . .                   | Mussooree . . . . .          | Ervum hirsutum.                |
| 719 | Anab . . . . .               | . . . . .                   | Cashmere . . . . .           | Zizyphus.                      |
| 720 | Anab ool salib . . . . .     | . . . . .                   | . . . . .                    | Solanum nigrum.                |
| 721 | Aod suleeb, F. . . . .       | . . . . .                   | Peshawur from Iran.          |                                |
| 722 | Tookhm Ghafis.               |                             |                              |                                |
| 723 | Gool Ghafis . . . . .        | . . . . .                   | Agrimony . . . . .           | Composite.                     |
| 724 | Fagherah . . . . .           | . . . . .                   | Himalayas . . . . .          | Xanthoxylon.                   |
| 725 | Fuji . . . . .               | . . . . .                   | India . . . . .              | Radish, Raphames sativus.      |
| 726 | Furunj mooshk.               |                             |                              |                                |
| 727 | Furunj mooshk, 2nd sort.     |                             |                              |                                |
| 728 | Furunj mooshk, 3rd sort.     |                             |                              |                                |
| 729 | Fistuk . . . . .             | Pista . . . . .             | Caubul.                      |                                |
| 730 | Gool Pista, F. . . . .       | . . . . .                   | Umritseer.                   |                                |
| 731 | Piturassaliyoon, F. . . . .  | . . . . .                   | . . . . .                    | Prangos pabularia.             |
| 732 | Piturassaliyoon . . . . .    | Another kind.               | . . . . .                    |                                |
| 733 | Filfil abiuz . . . . .       | . . . . .                   | White pepper . . . . .       | Piper nigrum.                  |
| 734 | Filfil uswud . . . . .       | . . . . .                   | Black pepper . . . . .       | Piper nigrum.                  |
| 735 | Fooful . . . . .             | . . . . .                   | Bengal betle nut . . . . .   | Areca Catechu.                 |
| 736 | Fooful Dukhnee, F. . . . .   | Chiknee soopiarce . . . . . | . . . . .                    | Areca.                         |
| 737 | Fofil Duknee, or Hindee, St. |                             |                              |                                |
| 738 | Kakleh saghar . . . . .      | Chotee elachee . . . . .    | Malabar cardamoms . . . . .  | Elettaria cardamomum.          |
| 739 | Kakleh Kubar . . . . .       | . . . . .                   | Bengal cardamoms . . . . .   | Alpinia?                       |
| 740 | Kissah . . . . .             | Kukree . . . . .            | . . . . .                    | Cucumis utilitissimus.         |
| 741 | Kussud . . . . .             | Kheera . . . . .            | Cucumber . . . . .           | Cucumis sativus.               |
| 742 | Kheera Kherah, F. . . . .    | . . . . .                   | . . . . .                    |                                |
| 743 | Tukhm Badrunj, St. . . . .   | . . . . .                   | . . . . .                    | Cucumis.                       |
| 744 | Kirdmana.                    |                             |                              |                                |
| 745 | Kirdmana, 2nd . . . . .      | . . . . .                   | Surat.                       |                                |
| 746 | Kiraseea . . . . .           | . . . . .                   | Cherry . . . . .             | Pruus Cerasus.                 |
| 747 | Kira . . . . .               | Kuddoo tulkh.               |                              |                                |
| 748 | Kira, 2nd, F. . . . .        | Kuddoo meetha.              |                              |                                |
| 749 | Kootun . . . . .             | Bunola . . . . .            | Cotton . . . . .             | Gossypium indicum.             |
| 750 | Kootun Bagheeche . . . . .   | . . . . .                   | New Orleans cotton . . . . . | Gossypium barbadense.          |
| 751 | Kumbela . . . . .            | . . . . .                   | . . . . .                    | Rottlera tinctoria.            |
| 752 | Kajoophul.                   |                             |                              |                                |
| 753 | Kakunj.                      |                             |                              |                                |
| 754 | Kakunj pesharee.             |                             |                              |                                |
| 755 | Kakunj, F. . . . .           | . . . . .                   | . . . . .                    | Solanum.                       |
| 756 | Ka Peru, St. . . . .         | . . . . .                   | Himalayas . . . . .          | Serratula anthelmintica.       |
| 757 | Kalee zeeree . . . . .       | . . . . .                   | . . . . .                    |                                |
| 758 | Kana bij, St. . . . .        | . . . . .                   | . . . . .                    | Piper Cubeba.                  |
| 759 | Kubab cheenee . . . . .      | . . . . .                   | . . . . .                    | Linum usitatissimum.           |
| 760 | Kutan . . . . .              | Ulse . . . . .              | . . . . .                    | Solanum indicum.               |
| 761 | Kutae buzoorg . . . . .      | . . . . .                   | . . . . .                    | Solanum.                       |
| 762 | Kutuelee, F. . . . .         | . . . . .                   | . . . . .                    | Solanum Jacquinii.             |
| 763 | Kuthi Khoord . . . . .       | Kuthuelee . . . . .         | . . . . .                    |                                |
| 764 | Kutora . . . . .             | . . . . .                   | . . . . .                    | Artocarpus integrifolia.       |
| 765 | Kuthul . . . . .             | . . . . .                   | . . . . .                    | Cucumis?                       |
| 766 | Kuchera, F. . . . .          | . . . . .                   | . . . . .                    | Allium porrum.                 |
| 767 | Korras . . . . .             | Peeazee . . . . .           | . . . . .                    | Apium graveolens.              |
| 768 | Kurufs . . . . .             | . . . . .                   | Room . . . . .               |                                |
| 769 | Kirmulee . . . . .           | . . . . .                   | Dehli.                       |                                |
| 770 | Kirvia . . . . .             | . . . . .                   | Subs. for Carum carui        |                                |
| 771 | Karela . . . . .             | . . . . .                   | India . . . . .              | Cueurbitacea.                  |
| 772 | Kurheey.                     |                             |                              |                                |
| 773 | Kuzeereh . . . . .           | Dhunya . . . . .            | India . . . . .              | Coriandrum sativum.            |
| 774 | Kuchorie.                    |                             |                              |                                |
| 775 | Kussonndhee, F. . . . .      | . . . . .                   | . . . . .                    | Cassia sophora.                |
| 776 | Kisteh . . . . .             | . . . . .                   | . . . . .                    | April?                         |
| 777 | Kisht bur Kisht . . . . .    | Muen phulle . . . . .       | . . . . .                    | Helicteres scabra.             |
| 778 | Kusoos . . . . .             | Ughas bel ke beej . . . . . | Caubul . . . . .             | Cuscuta.                       |
| 779 | Kushoos, St. . . . .         | . . . . .                   | . . . . .                    | Cuscuta.                       |
| 780 | Kulhuttee, St. . . . .       | . . . . .                   | White kind.                  |                                |
| 781 | Kulhuttee, St. . . . .       | . . . . .                   | . . . . .                    |                                |
| 782 | Kumazrioo.                   |                             |                              |                                |
| 783 | Kumangla . . . . .           | . . . . .                   | Kunawur . . . . .            | Carum nigrum.                  |
| 784 | Kumoon . . . . .             | Zeera seeah . . . . .       | Cumin . . . . .              | Cuminum Cyminum.               |
| 785 | Kumoon suffed . . . . .      | . . . . .                   | Dehli . . . . .              | Ximenia aegyptiaca.            |
| 786 | Kunkoth . . . . .            | Lungett . . . . .           | Dukhun.                      |                                |
| 787 | Kunkol mirch . . . . .       | . . . . .                   | . . . . .                    |                                |

| No. | —                             | Synonyms.                     | Places whence Obtained. | Scientific Names, &c.          |
|-----|-------------------------------|-------------------------------|-------------------------|--------------------------------|
| 788 | Kunkol mirch . . . . .        |                               | Dukhun.                 |                                |
| 789 | Kunowcheh . . . . .           | Kiwanch . . . . .             | India . . . . .         | Carpogon pruriens.             |
| 790 | Koonchee . . . . .            |                               | India.                  |                                |
| 791 | Koonchee.                     |                               |                         |                                |
| 792 | Kunotha? . . . . .            |                               | Bengal . . . . .        | Leguminosæ.                    |
| 793 | Kunotha? suffed . . . . .     |                               | Bengal . . . . .        | Leguminosæ.                    |
| 794 | Koonchee.                     |                               |                         |                                |
| 795 | Kungnee . . . . .             |                               |                         | Panicum miliaceum.             |
| 796 | Koda, F. . . . .              |                               | Saharunpore . . . . .   | Paspalum scrotialatum.         |
| 797 | Kawal gutta, F. . . . .       |                               |                         | Nelubium speciosum.            |
| 798 | Khush Khush . . . . .         |                               |                         | Poppyhead.                     |
| 799 | Kirnee, F. . . . .            |                               |                         | Mimusops Elengi.               |
| 800 | Kuhodia metha.                |                               |                         |                                |
| 801 | Kuhodia methæ . . . . .       | Kuel ka kullee.               |                         |                                |
| 802 | Kuth . . . . .                |                               | India . . . . .         | Feronia elephantum.            |
| 803 | Kunsonla . . . . .            |                               | Patna.                  |                                |
| 804 | Kinro, St.                    |                               |                         |                                |
| 805 | Kinro, St.                    |                               |                         |                                |
| 806 | Gowmadur, St.                 |                               |                         |                                |
| 807 | Hubool triuneh.               |                               |                         |                                |
| 808 | Guj peepul . . . . .          |                               |                         | Pothas.                        |
| 809 | Gul mishkun . . . . .         |                               |                         | Pterospermum.                  |
| 810 | Gundunah, F. . . . .          |                               |                         | Anthericum.                    |
| 811 | Goondar phul, St.             |                               |                         |                                |
| 812 | Gehoonle.                     |                               |                         |                                |
| 813 | Ghoonchee suffed . . . . .    |                               |                         | Abrus precatorius.             |
| 814 | Ghonchee seul.                |                               |                         |                                |
| 815 | Lajwantee . . . . .           |                               | India . . . . .         | Mimosa.                        |
| 816 | Lissan ool Huml . . . . .     | Bartung.                      |                         |                                |
| 817 | Lissan ool Asafeer.           |                               |                         |                                |
| 818 | Lowz . . . . .                | Badam i shereen . . . . .     | Caubul . . . . .        | Amygdalus communis.            |
| 819 | Lowz . . . . .                | Badam i tulkh . . . . .       | Caubul . . . . .        | Amygdalus communis var. amara. |
| 820 | Mal kungnee . . . . .         |                               |                         | Celastrus nutans.              |
| 821 | Mahlib, St. Scindee . . . . . | Gowla in Bombay, St.          |                         |                                |
| 822 | Mahmoodah, St.                |                               |                         |                                |
| 823 | Mahee zuburnj . . . . .       |                               |                         | Cocculus indicus.              |
| 824 | Muttur mushang, F.            |                               |                         |                                |
| 825 | Murshahy . . . . .            |                               |                         | Ipomæa.                        |
| 826 | Mirch soohh . . . . .         |                               |                         | Capsicum frutescens.           |
| 827 | Moomiyæ, St.                  |                               |                         |                                |
| 828 | Mukoh, F. . . . .             |                               |                         | Solanum indicum?               |
| 829 | Mukur zullee.                 |                               |                         |                                |
| 830 | Mukhareh . . . . .            |                               |                         | Euryale ferox.                 |
| 831 | Mundwa . . . . .              |                               |                         | Eleusine.                      |
| 832 | Motha . . . . .               |                               | Saharunpore . . . . .   | Phaseolus.                     |
| 833 | Moong . . . . .               |                               | Saharunpore . . . . .   | Phaseolus.                     |
| 834 | Wood.                         |                               |                         |                                |
| 835 | Nargeel . . . . .             |                               |                         | Cocos nucifera.                |
| 836 | Nag kesur . . . . .           | Narmocshk . . . . .           |                         | Mesua ferrea.                  |
| 837 | Nag kesur, St. . . . .        |                               |                         | Cassia buds.                   |
| 838 | Narunga.                      |                               |                         |                                |
| 839 | Nankwah . . . . .             | Ujwain . . . . .              |                         | Ligusticum ujwain.             |
| 840 | Wapoomba, St.                 |                               |                         | Careya arborea.                |
| 841 | Nermullee . . . . .           |                               |                         | Strychnos potatorum.           |
| 842 | Noog . . . . .                | Kala til and Ramtil . . . . . | Abyssinia . . . . .     | Guizotia oliefera.             |
| 843 | Neemb . . . . .               |                               |                         | Melia Azadirachta.             |
| 844 | Ward . . . . .                | Goolab . . . . .              |                         | Rosa Damascena.                |
| 845 | Wunga Tukhm, St.              |                               |                         | Cucurbitaceæ.                  |
| 846 | Wusari Meuh, St.              |                               |                         |                                |
| 847 | Halim, F. . . . .             |                               |                         | Lepidium.                      |
| 848 | Hoolhool . . . . .            |                               |                         | Cleome pentaphylla.            |
| 849 | Hulyoon . . . . .             |                               |                         | Asparagus officinalis.         |
| 850 | Hulyoon Tookhm.               |                               |                         |                                |

## GALLS.

|     |                             |                      |                  |                     |
|-----|-----------------------------|----------------------|------------------|---------------------|
| 851 | Buz-ghunj . . . . .         |                      |                  | Pistachia galls.    |
| 852 | Khimsuh . . . . .           |                      |                  | Pistachia.          |
| 853 | Mahee.                      |                      |                  |                     |
| 854 | Sakun, St. . . . .          |                      |                  | Tamarisk.           |
| 855 | Mahee Khoord.               |                      |                  |                     |
| 856 | Sumrat ool toorfa . . . . . | Buree muce . . . . . |                  | Tamarisk.           |
| 857 | Mue.                        |                      |                  |                     |
| 858 | Sumur Kokla . . . . .       |                      | Poorub.          |                     |
| 859 | Shukur teeghal . . . . .    |                      |                  | Asclepias gigantea. |
| 860 | Ufus nijjer phul . . . . .  |                      |                  | Quercus.            |
| 861 | Kakra singee . . . . .      |                      | Kalsee . . . . . | Rhus.               |
| 862 | Kakra singhee.              |                      |                  |                     |



## GUMS, RESINS, AND GUM RESINS.

| No. | —                               | Synonyms.                   | Places whence Obtained.     | Scientific Names, &c.                                |
|-----|---------------------------------|-----------------------------|-----------------------------|------------------------------------------------------|
| 863 | Ooshuk (ammoniacum)             | Kandurooskh . . .           | Caubul . . . . .            | Dorema ammoniacum.                                   |
| 864 | Unseroot . . . . .              | Sarcocolla . . . . .        | Surat Hills . . . . .       | Penæa Sarcocolla.                                    |
| 865 | Bar-zud birceja . . . . .       | Galbanum . . . . .          | Surat Hills . . . . .       | Bubon Gulbanum.                                      |
| 866 | Puddum ke gond . . . . .        | . . . . .                   | S. B. G. Hills . . . . .    | Prunus puddum.                                       |
| 867 | Puchdhara gond . . . . .        | . . . . .                   | S. B. G. . . . .            | Euphorbia antequorum.                                |
| 868 | Toorunjbeen . . . . .           | Persian manna . . . . .     | Caubul . . . . .            | Alhaji Maurorum.                                     |
| 869 | Toon ke gond . . . . .          | . . . . .                   | India . . . . .             | Cedrela Toona.                                       |
| 870 | Huzeez Mukke . . . . .          | A kind of benzoin . . . . . | Surat . . . . .             |                                                      |
| 871 | Jawasheer . . . . .             | Opoponax . . . . .          | Arabia . . . . .            | Pastinaca Opoponax.                                  |
| 872 | Jiugun ke gond . . . . .        | Kunnee gond . . . . .       | Khera Pass . . . . .        | Icica resinifera.                                    |
| 873 | Dum ool Akhwain . . . . .       | Dragon's blood . . . . .    | Surat. Arabia . . . . .     | Dracæna Draco. Calamus Rotang.<br>Pterocarpus Draco. |
| 874 | Rateeanuj . . . . .             | Colophony . . . . .         | Surat. . . . .              |                                                      |
| 875 | Zooft . . . . .                 | Resin . . . . .             | Room. . . . .               |                                                      |
| 876 | Saleh ke gond . . . . .         | Koondur . . . . .           | Khera . . . . .             | Boswellia serrata.                                   |
| 877 | Sukmoonya . . . . .             | Scammony . . . . .          | Surat . . . . .             | Convolvulus Scammonia.                               |
| 878 | Sukmoonya, 2nd . . . . .        | . . . . .                   | Surat. . . . .              |                                                      |
| 879 | Sukbeenuj . . . . .             | Sagapenum . . . . .         | Arabia . . . . .            | Ferula persica.                                      |
| 880 | Soondroos . . . . .             | Copal . . . . .             | Marwar. . . . .             |                                                      |
| 881 | Soondroos, 2nd . . . . .        | . . . . .                   | Africa. . . . .             |                                                      |
| 882 | Sohunjine ke gond . . . . .     | . . . . .                   | India . . . . .             | Hyperanthera Moringa.                                |
| 883 | Sirisa ke gond . . . . .        | . . . . .                   | India . . . . .             | Mimosa Serissa.                                      |
| 884 | Sem ke gond . . . . .           | Gota gond . . . . .         | Deyra and Rajpore . . . . . | Bauhinia gummifera.                                  |
| 885 | Sembul ke gond . . . . .        | Mochrus . . . . .           | India . . . . .             | Bombax heptaphylla.                                  |
| 886 | Elwa . . . . .                  | . . . . .                   | . . . . .                   | Aloa perfoliata.                                     |
| 887 | Ungoor ke gond . . . . .        | . . . . .                   | . . . . .                   | Vitis vinifera.                                      |
| 888 | Sumugh Araba . . . . .          | . . . . .                   | Arabia . . . . .            | Acacia vera.                                         |
| 889 | Ulk-ool-buttum . . . . .        | Chio turpentine . . . . .   | Surat . . . . .             | Pistacia Terebinthus Umritseer.                      |
| 890 | Firfiyom . . . . .              | Euphorbium . . . . .        | Arabia . . . . .            | Euphorbia.                                           |
| 891 | Karch . . . . .                 | Raf . . . . .               | Kherce . . . . .            | Shorea robusta.                                      |
| 892 | Kirasia . . . . .               | Cherrygum . . . . .         | Surat . . . . .             | Prunus Cerasus.                                      |
| 893 | Kuteera . . . . .               | Gond . . . . .              | Khera Pass . . . . .        | Bombax gesseypinum.                                  |
| 894 | Koondur olibanum . . . . .      | Loban . . . . .             | Surat . . . . .             | Cochlospermum.                                       |
| 895 | Koondur olibanum, 2nd . . . . . | . . . . .                   | Poonub. . . . .             |                                                      |
| 896 | Kunnee gond. . . . .            | . . . . .                   | . . . . .                   |                                                      |
| 897 | Kumurkus . . . . .              | Dhak ke gond . . . . .      | India . . . . .             | Butea frondosa.                                      |
| 898 | Koondroo . . . . .              | Saleh ke gond . . . . .     | Almora . . . . .            | Boswellia serrata.                                   |
| 899 | Khuer ke gond . . . . .         | . . . . .                   | Deyra . . . . .             | Acacia Catechu.                                      |
| 900 | Googlee . . . . .               | . . . . .                   | Hilla. . . . .              |                                                      |
| 901 | Ladun . . . . .                 | Labdanum . . . . .          | Surat . . . . .             | Cistus ladaniferus.                                  |
| 902 | Look . . . . .                  | Gum lac . . . . .           | Deyra, &c. . . . .          | Coccus lacca.                                        |
| 903 | Moor (bol) . . . . .            | Myrrh . . . . .             | Surat . . . . .             | Balsamodandra.                                       |
| 904 | Zurdaloo . . . . .              | Kegond . . . . .            | S. B. G. Hills . . . . .    | Prunus chooloo.                                      |
| 905 | Mustagee . . . . .              | Mastick . . . . .           | Caubul . . . . .            | Pistacia lentiscus.                                  |
| 906 | Mookul . . . . .                | Googul Bdellium . . . . .   | . . . . .                   | Amyris agolleche.                                    |
| 907 | Mookul, 2nd. . . . .            | Googul, 2nd. . . . .        | Hilla. . . . .              |                                                      |
| 908 | Naguoree gond. . . . .          | . . . . .                   | Nagora. . . . .             | Alalle archæa.                                       |
| 909 | Nishasteh . . . . .             | . . . . .                   | Mirzapore. . . . .          |                                                      |

## MINERAL KINGDOM.

|    |                         |                                                        |                       |                                                 |
|----|-------------------------|--------------------------------------------------------|-----------------------|-------------------------------------------------|
| 1  | Abar . . . . .          | { Seesa ke rakh.<br>Seesa jullahoon<br>(burnt lead.) } | India . . . . .       | Oxide of lead.                                  |
| 2  | Ulree . . . . .         | Yellow tertiary . . . . .                              | Juepore . . . . .     | Limestone.                                      |
| 3  | Ulree, 2nd. . . . .     | . . . . .                                              | Surat . . . . .       | Limestone.                                      |
| 4  | U'bkur . . . . .        | Shora . . . . .                                        | India . . . . .       | Nitrate of potash.                              |
| 5  | U'swud . . . . .        | Soormee . . . . .                                      | Kurpaul . . . . .     | Sulphuret of lead.                              |
| 6  | U'swud, 2nd. . . . .    | Soorma . . . . .                                       | Caubul . . . . .      | Sulphuret of antimony.                          |
| 7  | U'swud suffed . . . . . | Soorma suffed . . . . .                                | Caubul . . . . .      | Calcareous spar.                                |
| 8  | Ajur . . . . .          | Purance aent ke khora . . . . .                        | India . . . . .       | Old bricks impregnated with sa-<br>line matter. |
| 9  | Isfidaj . . . . .       | Suffeda . . . . .                                      | Furruka bad . . . . . | White lead.                                     |
| 10 | Isfidaj, 2nd . . . . .  | { Suffeda kash. kuncce. }<br>— kas kurce. v. }         | Surat. . . . .        |                                                 |
| 11 | Ermance . . . . .       | . . . . .                                              | Surat . . . . .       | Serpentine opal.                                |
| 12 | Barood . . . . .        | . . . . .                                              | India . . . . .       | Gunpowder.                                      |
| 13 | Bokhrar . . . . .       | . . . . .                                              | Surat . . . . .       | Opal, striped.                                  |
| 14 | Birunj . . . . .        | Peetul . . . . .                                       | India . . . . .       | Brass.                                          |
| 15 | Birorj . . . . .        | . . . . .                                              | Tanktoda . . . . .    | Selenite.                                       |
| 16 | Bilor . . . . .         | . . . . .                                              | Dehlee . . . . .      | Quartz crystal.                                 |
| 17 | Bilor, 2nd . . . . .    | . . . . .                                              | Pegu . . . . .        | Calcareous spar.                                |
| 18 | Borruk . . . . .        | Boorch yermance . . . . .                              | Arabia . . . . .      |                                                 |
| 19 | Bhurut . . . . .        | . . . . .                                              | Surat . . . . .       | Green carbonate of lime.                        |
| 20 | Pa . . . . .            | . . . . .                                              | Dukhun . . . . .      | Fibrous alum with green sulphate<br>of iron.    |
| 21 | Padzahr . . . . .       | Zuhr. mohra . . . . .                                  | Calcutta . . . . .    | Serpentine, v. Herbert's acct.                  |

| No. | —                                | Synonyms.                      | Places whence Obtained.    | Scientific Names, &c.                                             |
|-----|----------------------------------|--------------------------------|----------------------------|-------------------------------------------------------------------|
| 22  | Padzuhr suffed . . . . .         | Suffed zuhr. mohra . . . . .   | Surat . . . . .            | Lithomarge.                                                       |
| 23  | Padzuhr seeah . . . . .          | Seah zuhr. mohra . . . . .     | Benares . . . . .          | Dark-green serpentine.                                            |
| 24  | Patoonia . . . . .               | . . . . .                      | Khimas . . . . .           | Heliotrope.                                                       |
| 25  | Patoonia, 2nd. . . . .           | . . . . .                      | Surat . . . . .            | Serpentine.                                                       |
| 26  | Pisla . . . . .                  | . . . . .                      | Kangra . . . . .           | Green felspar.                                                    |
| 27  | Paluta . . . . .                 | . . . . .                      | Juepore . . . . .          | Bloodstone.                                                       |
| 28  | Pulewa . . . . .                 | . . . . .                      | Juepore . . . . .          | Clay slate.                                                       |
| 29  | Pindol . . . . .                 | . . . . .                      | Chilkhana . . . . .        | White clay.                                                       |
| 30  | Pokhraj . . . . .                | . . . . .                      | Surat . . . . .            | Opal beryl?                                                       |
| 31  | Peoree . . . . .                 | . . . . .                      | Hatras . . . . .           | Light clay coloured by vegetable matter.                          |
| 32  | Toormulee zurd . . . . .         | . . . . .                      | Surat. . . . .             |                                                                   |
| 33  | Toormulee, 2nd. . . . .          | . . . . .                      | Surat. . . . .             |                                                                   |
| 34  | Toormulee, 3rd. . . . .          | . . . . .                      | Pegu. . . . .              |                                                                   |
| 35  | Toormulee subz . . . . .         | . . . . .                      | Pegu. . . . .              |                                                                   |
| 36  | Toormulee suffed . . . . .       | . . . . .                      | Pegu. . . . .              |                                                                   |
| 37  | Toormulee suffed . . . . .       | . . . . .                      | Surat. . . . .             |                                                                   |
| 38  | Toormulee seeah . . . . .        | . . . . .                      | Pegu. . . . .              |                                                                   |
| 39  | Tillinr puthur . . . . .         | . . . . .                      | Kassypore . . . . .        | Hornblende quartz.                                                |
| 40  | Tincal . . . . .                 | Sohaga . . . . .               | Noodurpore . . . . .       | Borax.                                                            |
| 41  | Tincal, 2nd. . . . .             | Sohaga tellia (oily) . . . . . | Noodurpore . . . . .       | Borax.                                                            |
| 42  | Tobal . . . . .                  | Muel tambak . . . . .          | India . . . . .            | Dross of copper                                                   |
| 43  | Tootya . . . . .                 | Neela thothia . . . . .        | Marwar . . . . .           | Sulphate of copper.                                               |
| 44  | Tootya haroonee . . . . .        | . . . . .                      | Arabia. . . . .            |                                                                   |
| 45  | Tootya subz . . . . .            | Goozuratee . . . . .           | Guzerat. . . . .           |                                                                   |
| 46  | Tippus . . . . .                 | . . . . .                      | Surat . . . . .            |                                                                   |
| 47  | Juokhar . . . . .                | . . . . .                      | Dehlee . . . . .           | Carbonate of potash.                                              |
| 48  | Choonee pl. choonya . . . . .    | . . . . .                      | Surat . . . . .            | Spinnelle ruby.                                                   |
| 49  | Hijr (stone) . . . . .           | No name . . . . .              | Surat . . . . .            | Graphite.                                                         |
| 50  | Hijr-urmunee . . . . .           | . . . . .                      | Arabia . . . . .           | Red jasper.                                                       |
| 51  | Hijr-ool-hudeed . . . . .        | . . . . .                      | Caubul . . . . .           | Iron ore.                                                         |
| 52  | Hijr-ool-hudeed, 2nd. . . . .    | . . . . .                      | Hills . . . . .            | Iron ore.                                                         |
| 53  | ? . . . . .                      | . . . . .                      | Surat . . . . .            | Iron ore.                                                         |
| 54  | Hijr-ool-sitar . . . . .         | Sung sitara . . . . .          | Surat . . . . .            | Avanturine?                                                       |
| 55  | Hijr-ool-sitar, 2nd . . . . .    | . . . . .                      | Dehlee, B. . . . .         |                                                                   |
| 56  | Hijr-ool-simak . . . . .         | . . . . .                      | Dukhun . . . . .           | Granite porphyritic.                                              |
| 57  | Hijr-ool-simak . . . . .         | Oonabee . . . . .              | Dukhun . . . . .           | Porphyry.                                                         |
| 58  | Hijr-ool-simak . . . . .         | Kirmizee . . . . .             | Mecca . . . . .            | Porphyritic jasper.                                               |
| 59  | Hijr-ool-ajalb . . . . .         | . . . . .                      | Surat . . . . .            | Milky quartz.                                                     |
| 60  | Hijr-ool-Eesa . . . . .          | . . . . .                      | Dehlee, B. . . . .         | Serpentine.                                                       |
| 61  | Hijr-ool-khuttoo . . . . .       | . . . . .                      | Surat . . . . .            | Limestone (Jesselmere limestone).                                 |
| 62  | Hijr-ool-mahuk . . . . .         | Kusoutee . . . . .             | Dukhun . . . . .           | Touchstone (flinty slate).                                        |
| 63  | Hijr-ool-murium . . . . .        | . . . . .                      | Dehlee, B. . . . .         | Tertiary limestone v. Voysey, used in tomb of Secundra.           |
| 64  | Hijr-ool-murium, 2nd . . . . .   | . . . . .                      | Caubul . . . . .           | Coarse grained quartz.                                            |
| 65  | Hijr-ool-muknatees . . . . .     | Choombuk . . . . .             | Dehlee (Gwalior) . . . . . | Leadstone.                                                        |
| 66  | Hijr-ool-moosa . . . . .         | Tilia koorund . . . . .        | Hurdwar. . . . .           |                                                                   |
| 67  | Hijr-ool-meena . . . . .         | Kanch . . . . .                | Surat . . . . .            | Glass.                                                            |
| 68  | Hijr-ool-meena, 2nd. . . . .     | . . . . .                      | Surat. . . . .             |                                                                   |
| 69  | Hijr-ool-nan . . . . .           | Chukmak . . . . .              | Surat . . . . .            | Quartz, substit. for flints.                                      |
| 70  | Hijr-ool-yusheb . . . . .        | Sung eeshum . . . . .          | Caubul . . . . .           | White compact quartz.                                             |
| 71  | Hijr-ool-yusheb abiuz . . . . .  | Sung eeshum suffed . . . . .   | Caubul . . . . .           | White compact quartz.                                             |
| 72  | Hijr-ool-yusheb ukhzur . . . . . | Sung eeshum subz . . . . .     | Caubul . . . . .           | Chalcedonic quartz.                                               |
| 73  | Hijr-ool-Yahodee . . . . .       | Sung yahoodans . . . . .       | Arabia . . . . .           | Lapis judaicus fossil spine of an echinus.                        |
| 74  | Hudeed . . . . .                 | Kheree loha . . . . .          | Dukhun . . . . .           | Iron of superior quality.                                         |
| 75  | Hudeed ispat . . . . .           | Ispat . . . . .                | Surat . . . . .            | Steel.                                                            |
| 76  | Kharuk . . . . .                 | . . . . .                      | Surat . . . . .            | Crystals of calcareous spar. Chalcedony also given.               |
| 77  | Khirmumjee . . . . .             | . . . . .                      | Hills . . . . .            | Quartz pebble.                                                    |
| 78  | Darloor . . . . .                | . . . . .                      | . . . . .                  | Clay slate.                                                       |
| 79  | Doolhya . . . . .                | . . . . .                      | Surat . . . . .            | White agate.                                                      |
| 80  | Duchnuj . . . . .                | Dana firung . . . . .          | Surat . . . . .            | Malachite: acetate of copper.                                     |
| 81  | Dhoonuela . . . . .              | . . . . .                      | Surat . . . . .            | Topa smoky quartz.                                                |
| 82  | Dhedhee . . . . .                | . . . . .                      | Surat . . . . .            | Touchstone.                                                       |
| 83  | Ru:wad . . . . .                 | . . . . .                      | Surat . . . . .            | Red jasper; red clay-stone.                                       |
| 84  | Ruskupoor . . . . .              | . . . . .                      | Dukhun Poorub . . . . .    | Submuriate of mercury.                                            |
| 85  | Risas abiuz . . . . .            | Ranga . . . . .                | Poorub . . . . .           | Tin.                                                              |
| 86  | Risas uswud . . . . .            | Secsa . . . . .                | Hills . . . . .            | Lead.                                                             |
| 87  | Rosukhtuj . . . . .              | Tamba julla hooa . . . . .     | Surat . . . . .            | Impure oxide of copper.                                           |
| 88  | Rowlee . . . . .                 | . . . . .                      | Dehlee . . . . .           | A compound made with huldee, soap, &c., used in making the tikka. |
| 89  | Rooree . . . . .                 | Kansee . . . . .               | India . . . . .            | Bell metal.                                                       |
| 90  | Zubur jud . . . . .              | . . . . .                      | Surat . . . . .            | Impure emerald.                                                   |
| 91  | Zizaj . . . . .                  | Kanch . . . . .                | India . . . . .            | Glass.                                                            |
| 92  | Zarneekh suffed . . . . .        | . . . . .                      | Poorub . . . . .           | Selenite.                                                         |
| 93  | Zarneekh soorkh . . . . .        | Munsul . . . . .               | Dukhun . . . . .           | Red orpiment; red sulphuret of arsenic.                           |
| 94  | Zarneekh zurd . . . . .          | Hurtal . . . . .               | Dukhun . . . . .           | Yellow orpiment.                                                  |
| 95  | Zarneekh tubkee . . . . .        | Yellow . . . . .               | Dukhun . . . . .           | Yellow realgar.                                                   |
| 96  | Zumurood . . . . .               | . . . . .                      | Patna . . . . .            | Emerald.                                                          |
| 97  | Zumurood toddee . . . . .        | . . . . .                      | Herat . . . . .            | Emerald, or cat's eye?                                            |
| 98  | Zinjar . . . . .                 | Zungar . . . . .               | Agra . . . . .             | Verdigrise.                                                       |

| No. | —                              | Synonyms.                      | Places whence Obtained.              | Scientific Names, &c.                                                                    |
|-----|--------------------------------|--------------------------------|--------------------------------------|------------------------------------------------------------------------------------------|
| 99  | Zunjufr . . . . .              | Shungruf . . . . .             | Poorub . . . . .                     | Cinnabar.                                                                                |
| 100 | Sar . . . . .                  | Foulad kooshteh . . . . .      | India . . . . .                      | Oxide of iron.                                                                           |
| 101 | Shijree . . . . .              |                                | Surat . . . . .                      | Chalcedonic pebble.                                                                      |
| 102 | Surunj . . . . .               | Sundoor . . . . .              | Calcutta . . . . .                   | Red lead; minium.                                                                        |
| 103 | Sulajcet . . . . .             |                                | Hills . . . . .                      | Bitumen; impure, burns with slight flame.                                                |
| 104 | Sulajcet, 2nd . . . . .        |                                | Hills . . . . .                      | Coal.                                                                                    |
| 105 | Dar shikna . . . . .           | Soolemanee . . . . .           | Surat . . . . .                      |                                                                                          |
| 106 | Soolemanee . . . . .           |                                | Surat . . . . .                      | Onyx.                                                                                    |
| 107 | Sung-par . . . . .             |                                | Caubul, Mushapoor . . . . .          | Fibrous alum.                                                                            |
| 108 | Se . . . . .                   |                                | Surat . . . . .                      | Jet.                                                                                     |
| 109 | Sung saffee . . . . .          |                                | Dehlee . . . . .                     | Pot-stone; talcaceous schist?                                                            |
| 110 | Sung jurahut . . . . .         | Suffed soorma . . . . .        | Dehlee . . . . .                     | Calcareous spar.                                                                         |
| 111 | Sung jurahut, 2nd . . . . .    |                                | Hills . . . . .                      | Alum.                                                                                    |
| 112 | Sung misree . . . . .          |                                | Caubul . . . . .                     | Egyptian stone?                                                                          |
| 113 | Sung Misree, 2nd . . . . .     |                                | Surat . . . . .                      | Egyptian stone?                                                                          |
| 114 | Sonailah . . . . .             |                                | Surat . . . . .                      | Smoky quartz.                                                                            |
| 115 | Set khurree . . . . .          |                                | Hills . . . . .                      | Talcaceous schist?                                                                       |
| 116 | Shudnuj udsee . . . . .        |                                | Arabia . . . . .                     | Carbonate of lime, coloured by carbonate of iron, with a nucleus of calcareous crystals. |
| 117 | Shub yemance abiu . . . . .    | Phitkhurru suffed . . . . .    | Poorub . . . . .                     | White alum.                                                                              |
| 118 | Shub yemance ahmur . . . . .   | Phitkhurru soorukh . . . . .   | Peshawur . . . . .                   | Red alum.                                                                                |
| 119 | Shub yemance ukhzur . . . . .  | Phitkhurru subz . . . . .      | Reworee . . . . .                    | Greenish alum.                                                                           |
| 120 | Shibbeh . . . . .              | Just . . . . .                 | Arabia, Poorub . . . . .             | Zinc.                                                                                    |
| 121 | Shibbeh mohrik . . . . .       | Justjulle hooa . . . . .       | India . . . . .                      | Oxide of zinc.                                                                           |
| 122 | Shurbuttee . . . . .           |                                | Caubul . . . . .                     | White chalcedony.                                                                        |
| 123 | Sumb ool far abiu . . . . .    | Simbul khar suffed . . . . .   | Caubul . . . . .                     | White oxide of arsenic.                                                                  |
| 124 | Shumb ool uhmur . . . . .      | Simbul khar soorukh . . . . .  | Caubul . . . . .                     | Red sulphuret of arsenic.                                                                |
| 125 | Shumb ool usfur . . . . .      | Simbul khar zurd . . . . .     | Caubul . . . . .                     | Yellow sulphuret of arsenic.                                                             |
| 126 | Sabon . . . . .                | Lahoree . . . . .              | Lahore . . . . .                     | Lahore soap.                                                                             |
| 127 | Tabasheer . . . . .            | Bans lochun . . . . .          | India, Poorub . . . . .              | Tabasheer.                                                                               |
| 128 | Tulk abiu . . . . .            | Ubruk suffed . . . . .         | Dukhun . . . . .                     | White mica.                                                                              |
| 129 | Tulk kooshteh . . . . .        | Ubruk mara hova . . . . .      |                                      | Burnt mica.                                                                              |
| 130 | Tulk uswud . . . . .           |                                | Sermona . . . . .                    | Black mica.                                                                              |
| 131 | Teen uhmur . . . . .           | Geero . . . . .                | Gwalior . . . . .                    | Red clay, or clay slate.                                                                 |
| 132 | Teen ukhzur . . . . .          | Gil subz subz muttee . . . . . | Dehlee . . . . .                     | Green earth.                                                                             |
| 133 | Teen armenee . . . . .         | Gil urmunee . . . . .          | Arabia . . . . .                     | Armenian bole? lithomarge.                                                               |
| 134 | Teen Daghistanee . . . . .     |                                | Surat . . . . .                      | Yellow clay; lithomarge.                                                                 |
| 135 | Teen Gunjonee . . . . .        | Mooltancee muttee . . . . .    | Lahore . . . . .                     | Whitish clay.                                                                            |
| 136 | Teen Kibrusee . . . . .        |                                | Surat . . . . .                      | Cyprus earth; S. Q. 2, 2, lithomarge, with muriate of soda.                              |
| 137 | Teen mukhtoom . . . . .        |                                | Caubul . . . . .                     | Red clay slate.                                                                          |
| 138 | Teen usfur . . . . .           | Zurd muttee . . . . .          | Mooltan . . . . .                    | Yellow clay slate.                                                                       |
| 139 | Ajooba . . . . .               |                                | Dukhun . . . . .                     | Variegated limestone, with organic remains.                                              |
| 140 | Akeek . . . . .                |                                | Surat . . . . .                      | Cornelian.                                                                               |
| 141 | Akeek, 2nd . . . . .           |                                | Surat . . . . .                      | Common agate.                                                                            |
| 142 | Ghoree . . . . .               |                                | Surat . . . . .                      | White cornelian.                                                                         |
| 143 | Ghoree, 2nd . . . . .          |                                |                                      | Agate.                                                                                   |
| 144 | Ghoree, 3rd . . . . .          |                                |                                      |                                                                                          |
| 145 | Ghoree, 4th . . . . .          |                                |                                      |                                                                                          |
| 146 | Firosuj . . . . .              |                                | Bokhara . . . . .                    | Turquoise.                                                                               |
| 147 | Firosuj, 2nd . . . . .         |                                |                                      |                                                                                          |
| 148 | Kufr ool yahood . . . . .      |                                | Surat . . . . .                      | Asphaltum; Jew's pitch.                                                                  |
| 149 | Kullee abiu . . . . .          | Sujjee muttee . . . . .        | Batandur N. of Saharunpore . . . . . | Carbonate of soda.                                                                       |
| 150 | Kullee ahmur, 2nd . . . . .    |                                |                                      |                                                                                          |
| 151 | Kullee uswud . . . . .         |                                |                                      | Impure                                                                                   |
| 152 | Kashuree . . . . .             |                                | Kangra . . . . .                     | Fine-grained slate; argillaceous carbonate of lime.                                      |
| 153 | Kashuree, 2nd . . . . .        |                                | Surat . . . . .                      | Chalcedony.                                                                              |
| 154 | Kibreet cha chia . . . . .     |                                |                                      | Sulphur.                                                                                 |
| 155 | Kibreet cha chi, 2nd . . . . . |                                |                                      | Sulphur.                                                                                 |
| 156 | Kibreet moosleo . . . . .      |                                |                                      | Sulphur, roll.                                                                           |
| 157 | Kibreet nirmula . . . . .      | Sax . . . . .                  | Dukhun . . . . .                     |                                                                                          |
| 158 | Kibreet aonla sar . . . . .    | Gundhuk . . . . .              | Dukhun . . . . .                     | A compound.                                                                              |
| 159 | Kibreet seeah . . . . .        | Kaleo gundhuk . . . . .        |                                      |                                                                                          |
| 160 | Kittee . . . . .               |                                | Bullungur . . . . .                  | Iron ore.                                                                                |
| 161 | Kurketuk . . . . .             |                                |                                      | Sapphire.                                                                                |
| 162 | Kusees . . . . .               |                                | Dehlee . . . . .                     | Green vitriol.                                                                           |
| 163 | Kusees, 2nd . . . . .          |                                |                                      | Sulphate of iron.                                                                        |
| 164 | Kusees, 3rd . . . . .          |                                |                                      | Sulphate of iron.                                                                        |
| 165 | Killus . . . . .               | Choona . . . . .               | Hills, India . . . . .               | Lime.                                                                                    |
| 166 | Kulwa puthur . . . . .         |                                | Caubul . . . . .                     |                                                                                          |
| 167 | Kuthuela . . . . .             |                                | Surat . . . . .                      | Amethyst; amethystine quartz.                                                            |
| 168 | Koorund . . . . .              |                                | Benares . . . . .                    | Corundum.                                                                                |
| 169 | Khurya muttee . . . . .        |                                | Poorub . . . . .                     | White soapy clay.                                                                        |
| 170 | Gawa . . . . .                 |                                | Cashmere . . . . .                   | Compact quartz.                                                                          |
| 171 | Gopee chun dun . . . . .       |                                | Hurdwar . . . . .                    | White clay.                                                                              |
| 172 | Gomueduk . . . . .             |                                | Surat . . . . .                      | Milky quartz.                                                                            |
| 173 | Gao dunta . . . . .            |                                |                                      | Serpentine? greenstone.                                                                  |
| 174 | Lajwurd . . . . .              |                                | Khimas . . . . .                     | Lapis lazuli.                                                                            |
| 175 | Lal suffed . . . . .           |                                | Surat . . . . .                      | Topaz.                                                                                   |

| No. |                              | Synonyms.                | Places whence Obtained. | Scientific Names, &c.                  |
|-----|------------------------------|--------------------------|-------------------------|----------------------------------------|
| 176 | Lal goolabee . . . . .       | . . . . .                | Surat . . . . .         | Corundum.                              |
| 177 | Losinghan . . . . .          | . . . . .                | Caubul . . . . .        | Iron ore.                              |
| 178 | Luchsunya . . . . .          | . . . . .                | Surat . . . . .         | Milky quartz.                          |
| 179 | Luela . . . . .              | . . . . .                | . . . . .               | Coarse garnets.                        |
| 180 | Luelee . . . . .             | . . . . .                | . . . . .               | Felspar.                               |
| 181 | Mar mohuret . . . . .        | . . . . .                | Surat.                  |                                        |
| 182 | Manuk munowur . . . . .      | . . . . .                | Surat . . . . .         | Felspar, red ?                         |
| 183 | Manuk suffed . . . . .       | . . . . .                | Surat . . . . .         | Opal.                                  |
| 184 | Manuk soorkh . . . . .       | . . . . .                | Surat.                  |                                        |
| 185 | Moordar Sung . . . . .       | . . . . .                | India . . . . .         | Litharge; semi-vitreous oxide of lead. |
| 186 | Murksheesha . . . . .        | Sonamukhee . . . . .     | Surat . . . . .         | Schist, with iron pyrites.             |
| 187 | Murkuz . . . . .             | . . . . .                | Furrukhabad.            |                                        |
| 188 | Mushukoonia . . . . .        | Nimuk munyaree . . . . . | India.                  |                                        |
| 189 | Milleh uswud . . . . .       | Kala nimuk . . . . .     | . . . . .               | Black salt.                            |
| 190 | Nushae . . . . .             | Nishasta . . . . .       | India . . . . .         | Starch of wheat.                       |
| 191 | Nosadur . . . . .            | . . . . .                | India . . . . .         | Sal ammoniac.                          |
| 192 | Nosadur puakanee . . . . .   | . . . . .                | Surat . . . . .         | Sal ammoniac.                          |
| 193 | Hadya . . . . .              | . . . . .                | Cashmere . . . . .      | Compact quartz.                        |
| 194 | Hirumjee . . . . .           | . . . . .                | Mooltan.                |                                        |
| 195 | Yakoot Budukshanee . . . . . | . . . . .                | Surat . . . . .         | Ruby.                                  |
| 196 | Yakoot Rumanee . . . . .     | . . . . .                | Surat . . . . .         | Ruby.                                  |
| 197 | Yakoot zurd . . . . .        | . . . . .                | Surat.                  |                                        |
| 198 | Yakoot suffed . . . . .      | . . . . .                | Surat.                  |                                        |
| 199 | Yakoot kirumzee . . . . .    | . . . . .                | Surat . . . . .         | Green felspar.                         |
| 200 | Yakoot nubood . . . . .      | . . . . .                | Surat . . . . .         | Sapphire.                              |
| 201 | Yakoot nubood, 2nd . . . . . | . . . . .                | Surat . . . . .         | Sapphire.                              |
| 202 | Yakoot . . . . .             | . . . . .                | Keju.                   |                                        |

ANIMAL KINGDOM.

|    |                               |                            |                        |                                   |
|----|-------------------------------|----------------------------|------------------------|-----------------------------------|
| 1  | Uz far ool teeb . . . . .     | Nukh . . . . .             | Surat . . . . .        | Unguis odoratus; black Byzantine. |
| 2  | Padzahr hewanee . . . . .     | Zuhr mohreh . . . . .      | India, Surat . . . . . | Bezoar.                           |
| 3  | Bussud suffed . . . . .       | Moonga ke zur . . . . .    | Surat . . . . .        | Coral.                            |
| 4  | Bussud suffed, 2nd . . . . .  | Bekh moor jar . . . . .    | Dukhun.                |                                   |
| 5  | Bussud suffed, 3rd . . . . .  | . . . . .                  | Surat.                 |                                   |
| 6  | Shakh Moorjan . . . . .       | . . . . .                  | Surat.                 |                                   |
| 7  | Shakh Moorjan, 2nd . . . . .  | . . . . .                  | Surat.                 |                                   |
| 8  | Busud ke kism . . . . .       | . . . . .                  | Dukhun.                |                                   |
| 9  | Juban . . . . .               | Puneer . . . . .           | Caubul . . . . .       | Cheese.                           |
| 10 | Goond bedustur . . . . .      | . . . . .                  | . . . . .              | Castor.                           |
| 11 | Hijr ool hool . . . . .       | Sung. siri mahee . . . . . | Dehlee.                |                                   |
| 12 | Dod ool hureer . . . . .      | . . . . .                  | Poorub . . . . .       | Silk-worm cocoon.                 |
| 13 | Dhal shootier . . . . .       | . . . . .                  | Caubul . . . . .       | Cheese of camel's milk.           |
| 14 | Roob mahee . . . . .          | Mahee . . . . .            | Surat . . . . .        | Mirzapore.                        |
| 15 | Zoobd ool buhr . . . . .      | Sumundur jbug . . . . .    | Surat . . . . .        | Cuttle-fish bone.                 |
| 16 | Shuma . . . . .               | Mom . . . . .              | India . . . . .        | Wax.                              |
| 17 | Suduf . . . . .               | Seemp . . . . .            | Surat . . . . .        | Shell.                            |
| 18 | Hijr ool dek . . . . .        | . . . . .                  | India.                 |                                   |
| 19 | Ghurree ool jullood . . . . . | Sirep . . . . .            | India . . . . .        | Glue.                             |
| 20 | Kuchroba . . . . .            | . . . . .                  | Poorub . . . . .       | Amber.                            |
| 21 | Gao lochun . . . . .          | . . . . .                  | Surat.                 |                                   |
| 22 | Geedur soondee . . . . .      | Jackal's navel . . . . .   | India . . . . .        | Nest of Mantis.                   |
| 23 | Loloo . . . . .               | Mothee . . . . .           | Surat . . . . .        | Pearl.                            |
| 24 | Loloo . . . . .               | . . . . .                  | Surat.                 |                                   |
| 25 | Loloo zurd . . . . .          | . . . . .                  | Surat.                 |                                   |
| 26 | Loloo seah . . . . .          | . . . . .                  | Surat.                 |                                   |
| 27 | Loloo seah, 2nd . . . . .     | . . . . .                  | Surat.                 |                                   |
| 28 | Loloo seah khan . . . . .     | Mothee pucks . . . . .     | Surat.                 |                                   |
| 29 | Loloo seah goolaba . . . . .  | . . . . .                  | Surat.                 |                                   |
| 30 | Merjan . . . . .              | Moonga . . . . .           | . . . . .              | Coral.                            |
| 31 | Nafe moochk bila . . . . .    | . . . . .                  | Nepal.                 |                                   |
| 32 | Mac shootur . . . . .         | . . . . .                  | Arabia.                |                                   |
| 33 | Kustoora . . . . .            | . . . . .                  | Bengal.                |                                   |

MACHINEBY.

CLASS V.—Machines for direct use, including Carriages.

Model of a coin-sorting machine, from the Mint at Madras, according to Major Smith's plan.

Bamboo hackery; hackery wheels; axle and sockets for the same.

Native cart, hackery. This sort of cart is used throughout Lower Bengal, and particularly in commercial towns for the transport of goods. It is remarkable for its extraordinary strength, being equal to a load of several tons. The wheels are made of babool or *Acacia Arabica*, the axle of sunderee or *Heritiera minor*, the stocks for the

same of Asun wood, and the framework and yoke of bamboo. The axles are seldom oiled or greased, and its total cost varies from 1*l.* to 2*l.* 10*s.*

An eka, or native carriage, for one horse, made at Patna, and intended to show the kind of single draft vehicle used by persons of rank in Hindoostan. The harness for the same will be found under the head of Manufactures from Animal Substances. Both carriage and harness have been contributed by Syud Meer Lupt Ali Khan of Patna.

Model of a carriage for ladies, of a bullock carriage, and of two carts—from Lahore.

Models of Mahratta carriages—from Rajah of Nagpore.

Model of state palankeen, made for the Rajah of Travancore, by Messrs. Simpson of Madras.

Country cart for bullocks, and basket complete, manufactured at Chicacole.

Model of a royal cart—Moulmein.

Wooden rath of Muchhunder Nath (a god); another, of Kumaree (a goddess); another, of Juggunnatte (a god)—from Nepaul.

Iron balance and weights: dharnee, bisoulee, seer, tin-paw, and ek paw—from Nepaul.

Water clocks for day and night—from Nepaul.

#### CLASS VI.—*Manufacturing Machines and Tools.*

Various spinning-wheels; models of spinning-wheels—from Bengal and Lahore.

Spinning-wheel for making pine-apple thread—from Singapore.

Reels for spinning pine-apple thread—from Singapore.

Model of a machine for twisting together silk threads, used in weaving—from Nagpore.

Model of a hand machine, for spinning cotton—from Nagpore.

Weaver's loom, and implements for manufacturing Dacca muslins.

Model of a weaver's loom; weaver's loom—from Bengal and Nagpore.

Hand-loom, on which the bugis sarongs are made, with cloth in the process of weaving—from Celebes.

Model of frame of hand-loom, as guide in setting up.

Hand-loom, complete with frame. Shows a much higher state of art than the Celebes loom, although the principle is similar—from Palembang, Sumatra.

Model of a loom for making gold and silver lace—from Moorshedabad, Bengal.

Weaving loom from Mysore and from Nepal.

Carpet loom, with a drawing, from Hoonsoor, in Mysore.

Samples of cotton, with description of process of manufacture—from Dacca.

Charaka, for cleaning cotton, and cotton-press, from Broach.

Cotton-cleaning machine and charaka, for separating seed—from Madura and Tinnivelly.

Rotatory cotton-cleaning machine—from Guntoor.

Mahratta cotton foot roller, and cotton mill—from Mysore.

Mill for extracting seed from cotton-pods—from Gwalior.

Model of a cotton gin—from Moulmein. Cotton cleaner, and various churkas for cleaning cotton—from Agra.

Cotton Gins, No. 1 to 4, Churkas, such as are used in the division of Agra, in the north-western provinces of Bengal.

No. 1 is the common native churka of the north-western provinces. It is of extremely rough workmanship, being made by a village carpenter at a low price within the reach of the peasant, and answers its purpose tolerably well; a practised person may clean 16 lbs. of cotton a day; but 8 lbs. is a full average for men and women working eleven hours.

No. 2 is a native churka, though not exactly in common use, it is more expensive than the first and costs about 3s.; but the great drawback is that the wooden roller soon wears out and is not easily replaced, as great accuracy is required that the spirals in the screws fit perfectly into each other. In effectiveness it is rather better than the common roller.

No. 3 is an attempt to remedy the inconvenience resulting from the rapid wear and tear of the wooden roller, by replacing it with a brass one.

No. 4 is another attempted improvement of great moment, in the addition of a roller with a small longitudinal bar, with the object of gently pressing the karpas or unseeded cotton into the rollers, and thus feeding the churka of itself. To be effectual this must revolve very slowly.

Cottage saw gin, made under the direction of the Commercial Association of Manchester, by Mr. Jamieson, at

Ashton-under-Lyne, and of which 200 were sent to India by the Court of Directors of the East India Company.

Clay model of female figure cleaning cotton. Clay model of old woman winding cotton.—Both from Mr. Blechyndyn; made at Moorshedabad.

Printing blocks, as used near Calcutta.

Implements used in manufacture of iron, viz.: two anvils, two sledge hammers, and a pair of pincers.

Utensils manufactured from Hazareebagh iron, with aforesaid tools. An anvil, hammer, small hammer, plough-share, and smith's tongs, the production of Mirzapore.

A cane for receiving water; strainer, baler, pan, and beater, native implements used in cleaning gold dust.

Iron tools for making silver filigree work—Cutlack.

A drill, axe, chisel, saw, and file, as used by ivory carvers; also a pearl piercer—from Moorshedabad.

Grain and brick pounder; mortar and pestle for pounding grain; mill for pressing sugar cane; mill for grinding wheat—from Moorshedabad.

Model of grindstone and pestle and mortar—from Lahore.

Sugar cane mill and bruising machine—from Mysore.

A dalla, selinga, khorra, and niska, for cleaning rice—from Assam.

Curry-stone, for grinding articles of food, with grinder—from Ghazee-pore.

Oil-mill and house of the miller—from Gwalior. Maha Raja Rao Scindiah.

Model of an indigo factory and oil-mill—Jessore.

A potter's-wheel, and wheel for polishing jewels and sharpening knives—from Moorshedabad.

Hones set in sandal wood—from Bunsee in Boondie.

Grindstones of lac, with sand and corundum—from Coimbatore.

Carpenters' and masons' tools, carpenter's auger—from Lahore.

A still for distilling spirits—from Moorshedabad.

Axes, augurs, gouge, chisel, betle-nut crackers, and cocoa-nut graters—from Singapore.

Nepaul tile, and wooden mould of the same.

Nepaul bricks and wooden mould, wooden pestle and mortar, bamboo—from Nepaul.

Wooden machine for preparing rice and spinning; wooden instrument, with which the seed is separated from cotton—from Nepaul.

Khose and jana bana, for spreading rice—from Nepaul.

Dumdee, mhoosa, kokapoo, thoo, hatha, shirki, and kokathoo, ungoo kuthee, mool kuthee, and koenthee koo, forming a weaving-frame, with its materials—from Nepaul.

Wooden model of machine for grinding sugar-cane, from Nepaul; and another, used by Gorkhas.

Nepaul oilman's press, and one used by Gorkhas.

Wooden model of water-mill, for grinding corn, grain, &c., and stone of the mill, from Nepaul.

Wooden model of machine for preparing butter, from Nepaul.

Wooden rolling-pin, for making bread, and wooden spoons, used in warming milk, from Nepaul.

Bamboo milk-pot, for keeping milk, from Nepaul.

Instruments for working mines, from Nepaul.

Iron and wooden instruments, used by carpenters, from Nepaul.

Instruments used by goldsmiths, from Nepaul.

Tools, &c., used by leather-workers, from Nepaul.

Lechee, used by Phool plate-workers, from Nepaul.

Tools used by copper-pot makers, from Nepaul.

Tools used by blacksmiths, from Nepaul.

Tools used by bricklayers, from Nepaul.

Tools used by stone-cutters, from Nepaul.

Great difficulty has been experienced in identifying many of the articles sent from Nepaul, for the reasons stated by the Calcutta Committee—first, that the things were originally badly packed; and, secondly, that in coming down to Calcutta they were much injured by the rain, and lost their labels.

CLASS VII.—*Civil Engineering, Architectural, and Building Contrivances.*

- Persian wheel for raising water, from Lahore.  
 Picottah model, for drawing water from a well, from Madras.  
 Model of iron bridge in Doottee; models of bridges on the Britawti River, Trisool Gunga River, Bishnomuti River, Bagmuti River, and of common bridges in Nepaul.  
 Models of a tank, of soan dhara, and of a house, from Nepaul.  
 Models of Godavery anicut, from Madras.  
 Breakwater adapted to Madras surf.

CLASS VIII.—*Naval Architecture, Military Engineering, Ordnance Arms and Accoutrements.*

(A.) *Models of Vessels employed by the Natives in navigating the Indian Ocean and Rivers.*

Models of vessels called Buglo, Naodes, Gungo, Koteo, and Muchoo, from Cutch.

Models of Cutch boats.—These models of boats are presented for exhibition by H. H. the Rao of Cutch, in which country, viz., at Maudavee, they were constructed, and have been sent to the Exhibition to show the peculiarities of Cutch ship and boat building.

Models of native craft.—Models of native craft frequenting Bombay, and the Malabar coast. These were made in the dockyard at Bombay, under the superintendence of Commodore S. Lushington, Commander-in-chief of the Indian Navy, and Captain Hawkins, I. N. The Arab batella, No. 8, is a private contribution from Captain Hawkins, which, after it has been exhibited, he wishes to be placed at the disposal of the Hon. the Court of Directors, for their Museum. It is considered perfect in every respect as a whole, and as to the detail; and the making of it has been superintended by an Arab from the Persian Gulf. It is made out of the wood of the "Cornwallis," which, after burning to the water's edge, was sunk here in deep water. For further particulars of this, and descriptions of the other models, see the following accounts:—

1 The Snake-boat of Cochin is a canoe of great length; they are used by the opulent natives and Europeans, as boats for the conveyance and despatch of persons on the numerous rivers and backwaters, particularly on that between Cochin, Allipay, and Quilon, which is about 80 miles southward, and on that which runs to Palipact and Trichoor, the former place being about 20, and the latter about 60 miles to the northward. These boats are from 30 to 60 feet in length, without any regard to breadth or depth, as they are worked from the solid tree; the broadest do not exceed three feet. Those of the Raja and officers of state are very handsomely fitted up, and carved in the most fantastical manner; they are made very neat, and even splendid, with painting, gilding, &c. The largest boats are sculled by about 20 men, double banked, and when pressed, their velocity is surprising, as much as a mile in five minutes. These boats are peculiarly adapted to the rivers, for it frequently occurs, that in dry seasons, there are sand banks perfectly dry, nearly 100 yards in breadth, over which they must be drawn, by the strength of the few men who are in them; the smaller size having only six rowers and a cockswain.

Those natives who can afford the expense, have the cabin neatly fitted up with Venetian blinds on the sides, but generally the cuscus or grass mat is substituted.

2 The Catamarans of Madras are formed of three logs of timber, their length is from 20 to 25 feet, and breadth  $2\frac{1}{2}$  to  $3\frac{1}{4}$  feet, secured together with three spreaders and cross lashings; the centre log being much the largest, with a curved surface at the fore end, which tends and finishes upwards to a point. The side logs are similar in form, but smaller, having their sides straight, and fitted to the centre log.

These well-known floats are generally navigated by two

men, but sometimes by one only, with the greatest skill and dexterity, as they think nothing of passing through the surf at Madras, and at other parts of the coast, while boats of the country could not live on the waves. At sea they are propelled through the water to a ship on the coast, when boats of the best construction and form would swamp.

3 The yacht "Wave," or fishing-boat of Bombay.—This boat is the property of an officer of the Indian Navy; her model was taken from a fishing-boat of Bombay. The keel is curved, and being at the fore end 2 feet below the level of the keel amidships, it serves as a gripe or lee-board, and tends to make the boat weatherly. She has comparatively a flat floor, a hollow entrance, and a sharp flat run; her length over all 46 feet. Entrance breadth, 12 feet, and depth amidships, 3 feet 8 inches. Her main-mast is 36 feet in length, main-yard, 65 feet, mizen-mast, 22 feet, and mizen-yard, 40 feet. Sails lateen, made of drill, sewn in narrow cloths.

She was built as a pleasure yacht, but more particularly for the regattas, for which Bombay is famous, and when ballasted, has won many prizes. No boat of European form and construction has, as yet, been found to compete with her in point of sailing, in moderate weather.

4 The Jaugar, or Ferry-boat of Cochin, is formed by placing a floor of boards across two boats or canoes, from 10 to 12 feet fore and aft, and about 16 feet long. When these boats are thus formed into a raft, cattle and burthen-some articles are conveyed in them across the rivers, as also troops, with all their followers, horses, bullocks, &c. The boats or canoes are cut out of a solid log of timber, and are from 8 to 20 feet in length, 18 inches to 2 feet in breadth, and from 12 to 18 inches in depth.

When employed singly, the canoes are managed with much dexterity by the natives, with a scull or paddle, on the backwater of Cochin; and at the mouths of the creeks they are employed in great numbers in fishing.

The larger sort of boats are used for the conveyance of rice and merchandize on the numerous small rivers which flow into the backwater, extending 150 miles parallel to the sea coast.

5 The Cotton-boat of Bombay.—This description of boat belongs entirely to the port of Bombay, and they are so called on account of their being invariably employed in conveying cotton from the shore to the ships bound for China and Great Britain, loading with that article. These are the only boats made use of in loading and unloading the numerous kind of outward and inward cargoes of ships visiting the port. They are from 25 to 35 feet in length, 10 to 13 feet in breadth, and  $3\frac{1}{4}$  to 4 feet in depth. They are very rudely but strongly built, and the largest of them will carry 15 tons of dead weight. They are employed in bringing the produce of the Island of Salsette, such as grain, grass, vegetables, &c., to Bombay, also for the conveyance of troops with their baggage, to and from Panwell.

The inside of the boat is lined with bamboo matting to protect the cargo from bilge water. They are generally navigated by a crew of six men and a tindal, principally Mahommedans, who live in the boat.

On one side of the mast is a fire-place, and on the opposite a cask or tank, containing fresh water. The bottom is annually, or oftener, paid over with a mixture of chunam, or lime, and vegetable oil, which hardens, and is a good protection against worms. They have one mast which rakes forward, and a yard of the same length as the boat.

The cost of one of the best of them complete is about 700 rupees. They are mostly hired by the day, at a rate varying from two to five rupees, according to their size and season of the year.

6 The Dingee, or Bum-boat of Bombay, is a small boat, from 12 to 20 feet in length, 5 to 7 feet in breadth, and 18 inches to 2 feet in depth; with a raking mast, and a yard the same length as the boat; they are navigated by three

\* Mr. J. A. Keys, Assistant Indian Naval Storekeeper.

to four men, who very frequently are joint owners of the boat.

The dingees sail very well, and are employed in carrying persons to and from vessels in the harbour: they also carry people desirous of visiting the Islands of Elephanta, Caranjah, and others in the harbour of Bombay. It is generally the practice with captains and commanders of ships to hire one by the month, at the rate of 40 to 50 rupees. When so employed, they take off meat and provisions in the morning from the shore for the day's consumption, after which they are ever ready to convey officers to and from the ship, carry messages and notes, and any other service required of them.

The hiring of these boats is a great advantage, as it not only saves the ship's boats from being knocked about, but keeps the European seamen from exposure to the sun, which would injure their health, were the ship's boats so employed.

7 The Point de Galle Canoe is a boat formed from a single stem of doopwood, or pine-varnish tree. They are from 18 to 30 feet in length, from 18 inches to 2½ feet in breadth, and from 2 to 3 feet deep, exclusive of the wash-board, which is from 10 to 18 inches broad, and sewed to the gunwale with coir yarns, with loose coir padding on the joints.

These boats are fitted with a balance-log at the bamboo outrigger, having mast, yards, and sail secured together. Vessels passing the southern coasts of Ceylon are generally boarded by these boats even at the distance of 20 to 25 miles from shore.

They will sail at the rate of 10 miles an hour in strong winds, which are generally prevalent there, and with a crew of five men will carry a cargo of vegetables, which are great luxuries to the crew and passengers after a long voyage from England to Bombay and Bengal.

8 The Batelles of Bombay and Surat. The batelles belong principally to the merchants of Bombay and Surat, and are decidedly the best built and better found in fittings and stores than any other description of boats of Western India. They are built entirely of teak-wood, well planked, and fastened with iron nails and bolts; they have a great rise of sheer forward, and a regular stem, with madoes abaft; some are fitted with a cabin under the poop, but the majority of them carry bamboo decks over beams fitted for the purpose.

They are from 35 to 50 feet in length, 15 to 20 in breadth, and 5 to 7 feet in depth, and from 25 to 100 tons burthen. They are lateen rigged, having a main and mizen mast, both raking forward, and a boom forward, on which a jib is set: the main-yard is a little longer than the extreme length of the boat. They invariably have a break in the topsides from the fore part of the poop to the luff of bow, nearly level with the beams, for the facility of taking in and out heavy cargo. At sea this break is stopped up by bamboo mats inside, and outside with soft mud or puddle between. This excludes water, and is as water-tight as any other part of the hull. It is a remarkable fact that one never hears of any damage done to the cargo from this part, although when the boat is fully loaded the break is about 1 foot or 18 inches above water. These boats import cotton from Surat, Broach, Cambay, and other cotton-growing districts to Bombay, and teak timber from the northern forests, extensively used in ship-building and other purposes at Bombay.

9 The Arab Batelle. The batelles were the boats principally used by Joaseme pirates of the Persian Gulf, who were a terror to the native mariners till exterminated by the united efforts of the King's ships and the Honourable Company's vessels of war.

The batelles have a very sharp and hollow floor, a very clean run, and a perfect wedge-like entrance, which offers little or no resistance to the water. They are noted for their fast sailing and weatherly qualities, so much so that it was found very difficult by the vessels of the Royal and the Honourable Company's navy to capture them, even when the pirates were supposed to be on the point of surrendering, as they frequently made off in gallant style

when within gun-shot of the ship, and were chased and pursued in vain. The Arabs assert that no vessel could sail so close to the wind as the batelle, and there seems good ground for the assertion.

The mode of steering the batelle is very singular, as may be seen in the model. The rudder projects several feet below the peel of the stern-post; to the afterpart of the rudder is fixed the tiller, which has a curve pointing upwards; the ropes are led inboard by means of an outrigger at the side, by which the helmsman steers the batelle. They require very little head, as, indeed, the rudder is confined to a certain point by spreaders nailed on the stern-posts.

The batelles are lateen rigged, and have three suits of sails made of Bahrein canvas. In calms they are propelled by sweeps. The largest size batelle is 150 tons, and now only used by the Arab chiefs of the Persian Gulf on state occasions and visits of ceremony. This model is a private contribution from Capt. Hawkins, I.N., and is finally intended as a present to the Honourable the Court of Directors for their Museum.

10 The Arab Dow. This was another description of vessel used by the pirates of the Persian Gulf. The form of the dow is calculated for swift sailing, as they have a sharp floor and clean entrance. There are very few of these boats now in existence, as from their size and construction they are ill-adapted for the purposes of trade, and since there are no pirates there now, the dow will shortly become extinct. The peculiarity of the dow consisted in a long projecting gallery at the stern. The pirates used to impel the boats with sweeps stern foremost, and board from this gallery. The largest dow is about 200 tons. The bottom is paid over with a mixture of lime and boiled tallow, which hardens by exposure, and serves to keep it clean and free from the attacks of barnacles and other marine animals.

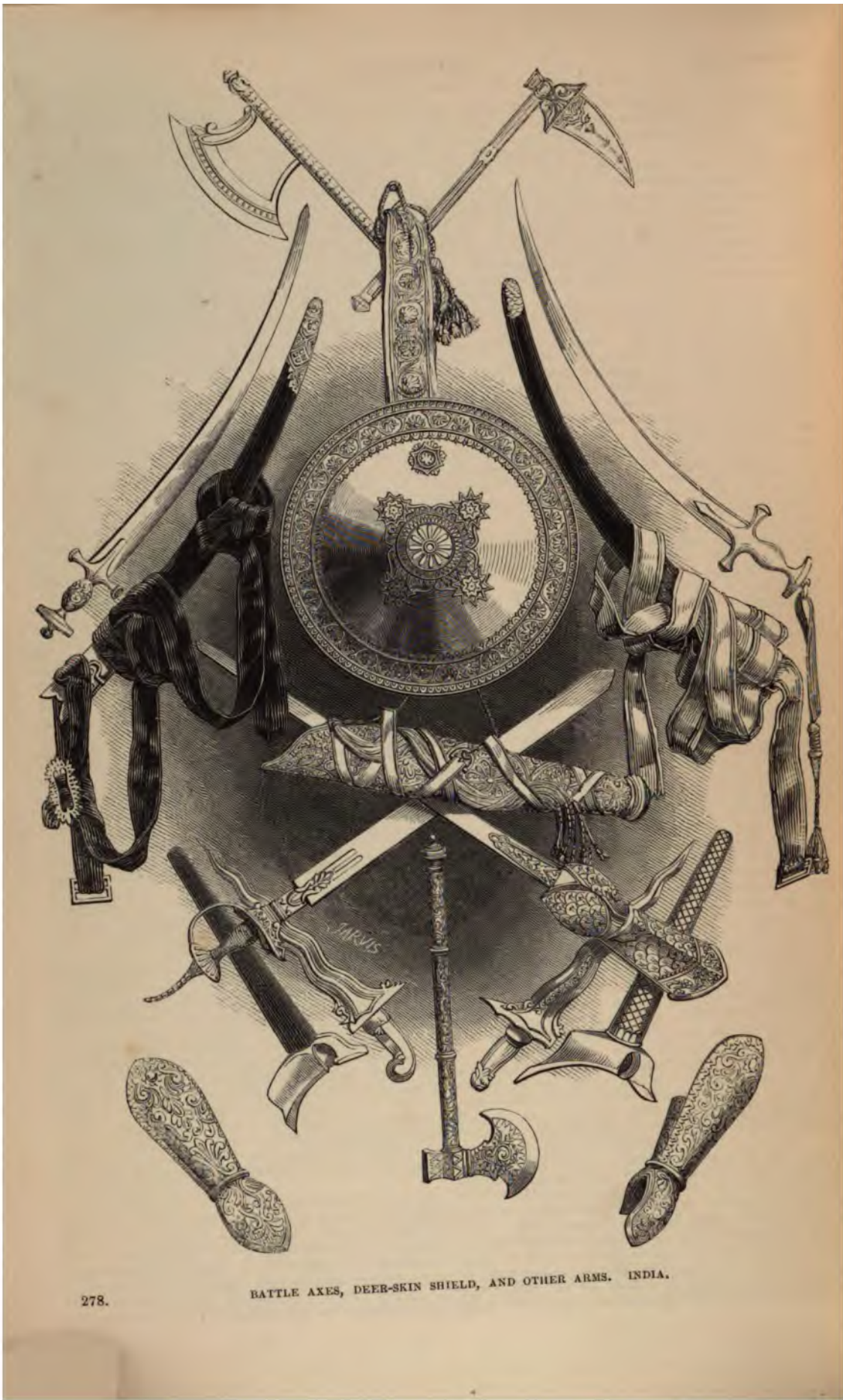
11 Cutch Dingee. These vessels are from 30 to 50 feet in length, 15 to 25 feet in width, and 7 to 10 feet deep, and from 20 to 100 tons burthen. They have a good rise of floor, and a fine entrance and run, calculated for fast sailing: some of them are decked wholly, others only abaft the mizen mast and a small part forward, the rest being left open for the stowage of cargo, which is frequently stowed considerably above the level of the gunwale, in which case a barricading of bamboo and coarse mats is fixed as a temporary protection: when not fully loaded, the materials are laid over slight wood framing between the beams which serve the purpose of a deck.

These vessels are tolerably well built with a mixture of jungle and teak wood, and fastened with nails, which go through, and are turned on the inside of the timber. The stern is very high, with double poop; the sides are perforated with ports, and ornamented with rough carving, and often painted a variety of colours. They belong principally to Cutch, Mandavee, Poar Bunder, and other sea-ports under the dominions of the Row of Cutch, and are navigated by a crew of 12 to 20 men, and a tindal. Their import cargo to Bombay is ghee (clarified butter, used extensively by the natives of India), salt fish, mustard, and grain; and the export cargo is piece goods, cutlery, metals and rice. Some of the largest go to Muscat and other ports in the Persian Gulf: they navigate the sea only in fine weather, and are invariably laid up in the south-west monsoon from June to the end of August. They are very frequently employed by the government for the conveyance of troops and stores to and from Kurrachee and other ports in the Presidency.

12 Cutch Cotiyah. These boats belong to the ports of Cutch, Mandavee, Poar Bunder, and some to Kurrachee, in the newly-acquired territory of Scinde, and trade between Bombay and those ports. They are very well built, with a square tuck, and many of them have a regular built stern, with ports, and handsomely carved. Some of them have a deck fore and aft, but more commonly they have frame-work between the beams, to ship and unship, for the facility of stowage, and a bamboo deck. They are from 30 to 50 feet in length, 12 to 23







feet in breadth, and 7 to 10 feet deep. They export salt-fish, grain, and other produce of the ports to which they belong. They are navigated by a crew of from 15 to 20 men and a tindal. They are lateen rigged, with a main and mizen sail, both masts raking forward, to keep the ponderous yards clear of the mast in lowering and hoisting.

These boats frequently take up troops and government stores to and from Kurrachee and other neighbouring ports to the Presidency.

13 The Ceylon Doni is a huge vessel of the ark-like form, about 70 feet long, 20 feet broad, and 12 feet deep, with a flat bottom or keel part, which at the broadest place is 5 to 7 feet, and tapers at the fore and after ends to about 10 inches. The fore and after bodies are nearly similar in form from a-midships; their light draught of water is about 4 feet, and when loaded about 9 feet. These rude, unshapely vessels trade from Madras and the coast to the island of Ceylon, and many of them to the Gulf of Mannar, as the water is shoal between Ceylon and the southern part of the continent. They have only one mast with a lug-sail, and are navigated from land to land and coastwise in fine weather only.

Arab bugalow, and pattamar of Bombay, from Bombay.—No description has been sent of this kind of vessel.

Kurrachee bugalow.—This is the only model supplied from Sindh.

The boats of the Indus and other crafts peculiar to Kurrachee were ordered; but the people who were employed to make them did not fulfil their engagements.

Model of a pleasure-boat of a Sikh chief, from Lahore.

Massulah boat, with oars, and a small cutter, from Madras.

Model of a boat and of an oar, from Nepal.

Models of Lanun pirate prahus; the first class carries a crew of 100 men, and the second class a crew of about 60 men: from Mindanao.

Model of Padewakhan, or Bugis trading prahu. The Bugis trade and the Trepong fishery are carried on in these vessels from Singapore.

Models of Sampan boats, peculiar to Singapore; three classes; first class very swift: from Singapore.

Tambangan or Sourabay passage boats.

Model of a large cargo boat, such as is used upon the Ganges, &c.

Model of a dinghy or small boat, ditto.

Model of a Burmese coasting vessel.

#### (B.) Arms, Ordnance, and Accoutrements.

Accoutrements:—Caps of rhinoceros hide, from the Rao of Cutch.

Shako topce, used by the lighter battalions, and black turban, used by Gorkha battalion; from Nepal.

Silver moons, used by various battalions, from Nepal.

Silver moon of the Rifle Company, and silver chain used by Nepal non-commissioned officers, from Nepal.

Breast-plate, cloth jacket, cotton jacket, broad-cloth pantaloons, and cotton-cloth pantaloons, used by Gorkha battalion, from Nepal.

Bengra cloth bag, for carrying sepoy's provisions, from Nepal.

Nepal captain's coat, worked with golden thread, from Rajpootanah.

Cloth pouch, belt, &c., studded with brass nails, from Rajah of Kotah.

Pouch, belt, powder-flasks, &c., from Jeypore.

Powder-flasks, and powder and shot belts, from Mundote.

Powder-flask, and girdle and pouches, used by Gorkhas, from Nepal.

Matchlocks, pistols, &c.:—Matchlock, with pouch-belt, from Rajah of Boondie.

Two amber matchlocks, with powder-flasks, &c., from the Rajah of Jeypore.

Three matchlocks, manufactured in the city of Patna, contributed by Baboo Koomar and Dyal Sing of Patna.

Matchlock manufactured at Bejnour, from Nugeena.

Matchlock manufactured at Bejnour, from Dhampoor in Rohilkund.

Two matchlocks, with apparatus complete, from Dholepoor in Rajpootanah.

Matchlock gun, matchlock rifle and rest, two rifles, and three rifle matchlocks, from H. H. Goolab Sing, Lahore, Mundote.

Matchlock, from the Rao of Cutch.

Matchlock, with gold mountings, and two small gold chains, from Gwalior, from Maha Rajah Rao Scindiah.

Gun, complete, in a case, with implements, made after European design in the states of Nepal.

Single barrel percussion gun; matchlock, gold mounted; pistol; and spare pistol, flint lock, from H. H. Meer Ali Moorad, Khyrpoor. These are private contributions from H. H. Meer Ali Moorad, which arrived here without description, and so late that there was but just time to repack them, and send them off on the following day. It is to be presumed that they are native manufacture, at least the matchlocks.—*Bombay Report*.

Pistol, from Lahore, and Rajah Goolab Sing.

Pair of pistols, manufactured at Agra. The manufacturers of Agra turn out pretty good weapons at comparatively low prices.

Swords, &c.:—Sword, with enamelled hilt; sword, with pistol and dagger affixed; sword, from Rajah of Kotah.

Three swords, from iron of Chota Nagpore; and two ancient swords, from Rajah of Bettiah, Moorshedabad.

Sword, from the Rao of Cutch.

Sword, from Malwa.

Sword, from Nawab of Rampore, Rohilkund.

Various swords, from Lahore.

A sword as used 40 years ago; a sword as used now; an old Mahratta sword, from Gwalior, from the Maha Rajah.

Sword scabbards; swords and daws.

Battle-axe, from Boondie.

Battle-axes, from Lahore.

Battle-axe, manufactured from indigenous substances in the dominions of the Rajah of Boondie, Rajpootanah states.

A kind of sword, khora; a short national sword, khookree, from Nepal.

Swords and sheaths, from Acheen, Sumatra.

Two swords with gilt handles, from Rajpootanah.

Two hilts of swords gilt, from Tonk in Rajpootanah.

Serohi sword blade of white steel, inlaid with gold; Serohi sword blade of dark steel, hilt richly inlaid with gold; Serohi kuttar or dagger, dark steel, inlaid with gold;

Bheel bows of bamboo; quivers of bheel arrows, manufactured at Serohi in Rajpootanah states.

A helmet and a complete suit of steel armour, inlaid with gold, from Dholepoor in Rajpootanah.

Two daggers, with enamelled shields, from Scinde.

Swords, mounted with gold and belts, from Khyrpoor. These blades are probably very scarce and dear. They are made of the fine ringing steel so esteemed in Sindh and the countries to the northward of it: they are termed Khorassan blades. They came among the collection from H. H. Meer Ali Moorad.

Kuttaroo or dagger; tabber or battle-axe; tabber of another kind; sword, spear, &c., from the Rao of Cutch.

Klewang, or sword, from Batan.

Sword of native iron by people of Kota, from Borneo.

Two daggers, manufactured entirely of native materials, from Rajah of Boondie.

Shields:—Shield of deer-skin, transparent, with enamelled bosses; and shield with gold bosses, each boss concealing a pistol, from Rajah of Kotah.

Shield, manufactured in the Rajpootana states.

Shield, from Lahore.

Shield, rhinoceros hide, from the Rao of Cutch. These are manufactured in Cutch for the neighbouring countries. They are made out of the rhinoceros hide brought from the eastern coast of Africa.

Rhinoceros shield, from Nepal.

Spears, bows, and arrows:—Mahratta spear, from Gwalior.

Arrows, spear, and bows, from Lahore.  
Bareilly painted bow, arrows, and quivers, from Lahore.  
A quiver and numerous arrows, from Gwalior.  
Bow; quiver with arrows; guard against bow-string, worn by the archers in left hand; small bow; kind of bow with iron chain instead of a string; small spear—from Nepal.

Bows and quivers, as used in the province of Assam.  
Ranching, or stiletto-dagger, from Acheen, Sumatra.  
Sling, bow, and a bag of clay balls, from Nepal.  
Bow-strings of fibres, Low Country, with a bow and four arrows, from Calicut.

Two war rings, from Rajah of Pattiala.  
Pair of wrestlers, as used in the North-west Provinces.  
Cutting instruments of war (Cutch). These are manufactured in Cutch.

Chain-armor, head-cover, sword, dagger, spear (point and but only), embroidered sword-belt, belt, shield, bag with pouches, and a matchlock, from Rajpootanah.

Fowling-piece with flint-lock, the barrel engraved with flowers; another fowling-piece; bullet-moulds for the above; sword inlaid with pearls, one side steel, the other iron; sword of steel, with two blades in one, forming two swords; dagger with two blades, in appearance one, but when separated forms two; knife with three blades, also in appearance one; chooree.—Contributions of H. H. the Maharajah of Ullwar.

Chain armour, with head-cover, from Rajpootanah.  
Set of steel armour inlaid with gold, from Dholepore in Rajpootanah.

Helmet and iron armlets, from Gwalior.  
Burmese shield, daggers, sword, and large knife, or chopper.

Sword and three daggers; two quivers, each containing sixty arrows; kaunda, a sword with gold mountings; matchlock, with gold mounting; bags for the matchlock; belt and pouches of silver for the matchlock.—Contributed by H. H. Maharajah of Jodhpore.

The following articles are used by Indian athletes:—Bamboo bow, with iron chain in place of string; wooden clubs of Sissoo wood; two-handed sword, made at Saugor, Central India; shields for practising sword-play; foils, or sham swords, from Marwar.

Kuttar, or dagger, jewelled. A dagger, containing another within it, and one which opens into five blades, from the Rajah of Pattiala.

Suit of armour; two pieces of horse armour; suit of armour, nine pieces; two locks; blunderbuss (Sikh); cannon (model); double cannon (model); mortar (model); howitzer; camel-gun and saddle, from Lahore.

Hill-gun complete, from M. H. R. Goolab Sing.  
Ordnance and models:—Two 3-pounder brass ornamented guns, with carriage complete, from Kurnool.

Two brass guns, lelah, or swivel guns, as used by Malay prahus. Forwarded from Singapore.

Models of two brass guns and carriages, from Mysore.  
Models of two oriental brass guns.

Various models of the artillery of the Indian army, from the three Presidencies. From the military stores, East India House.

“Tent, manufactured at the Jubulpore School of Industry. The whole of the materials used in constructing this tent have been manufactured, and the tent itself has been built by Thugs, and the sons of Thugs, who have learned their several trades in the Jubulpore Government Institution. The fact of its being throughout the work of reclaimed murderers, who only a few years ago subsisted on their fellow-men, and of their progeny, who, but for the measures of a benevolent government, would assuredly have followed the same trade, will, it is hoped, obtain for it an interest which neither the materials or construction could otherwise have done.”

CLASS IX.—*Agricultural and Horticultural Machines and Implements.*

Wooden models of two kinds of ploughs and carts, from Bengal.

Agricultural implements used in Tenasserim Provinces:—Plough, harrow, hoe, spade, sickle, rake, and bamboo stick covered at one end.

Agricultural implements used in Kemaon, North-west Provinces:—Plough, yoke, whip, mattock, hoe, rake, muzzle, shovel, reaping-hook, chopper, axe, and cotton-cleaner.

Agricultural implements used in Hooghly, Lower Bengal:—Plough, yoke, harrow, ladder used as a harrow, weeding instrument, plank on which paddy is beaten out, tripod stand for the same, and broom for sweeping the grain.

Model of Mahratta plough.  
Models of a plough and a harrow, from Lahore.  
Model of a drill-plough, from Broach.  
Ploughs of various descriptions, from Nepal.  
Iron hoes, grass-scraper, small hoe, pickaxe, and axe to cut wood, from Nepal.

Models of a plough, a harrow, and scarifier, to be drawn by buffaloes, from Malacca. These are used by the natives of Malacca. The scarifier is drawn by one or two buffaloes, and employed in cleaning from weeds and lalang the ground that has already been broken up by the plough.

Model of a chunghol, or large hoe; model of a sort of scythe; of a paddy reaper, and of a ratan cutter; from Malacca. The chungul is in very general use among the labourers of the Straits Settlements, and the scythe is used in cleaning the lalang, or coarse grass and brushwood from lands that have been allowed to lie fallow, preparatory to re-cultivation.—All forwarded by the Singapore Committee.

Model of a rice-husking machine; of a husbandman with agricultural implements: of two harrows and a plough; and of a harrow to be drawn by buffaloes, from Moulmein.

Models of agricultural implements, carts, mills, &c. This is a collection from Belgaum. They are a private contribution from H. Reeves, Esq., collector of Belgaum, who has accompanied them by the following description:—

*Description of Models of Farm Implements, &c., used in the Southern Mahratta Country.*

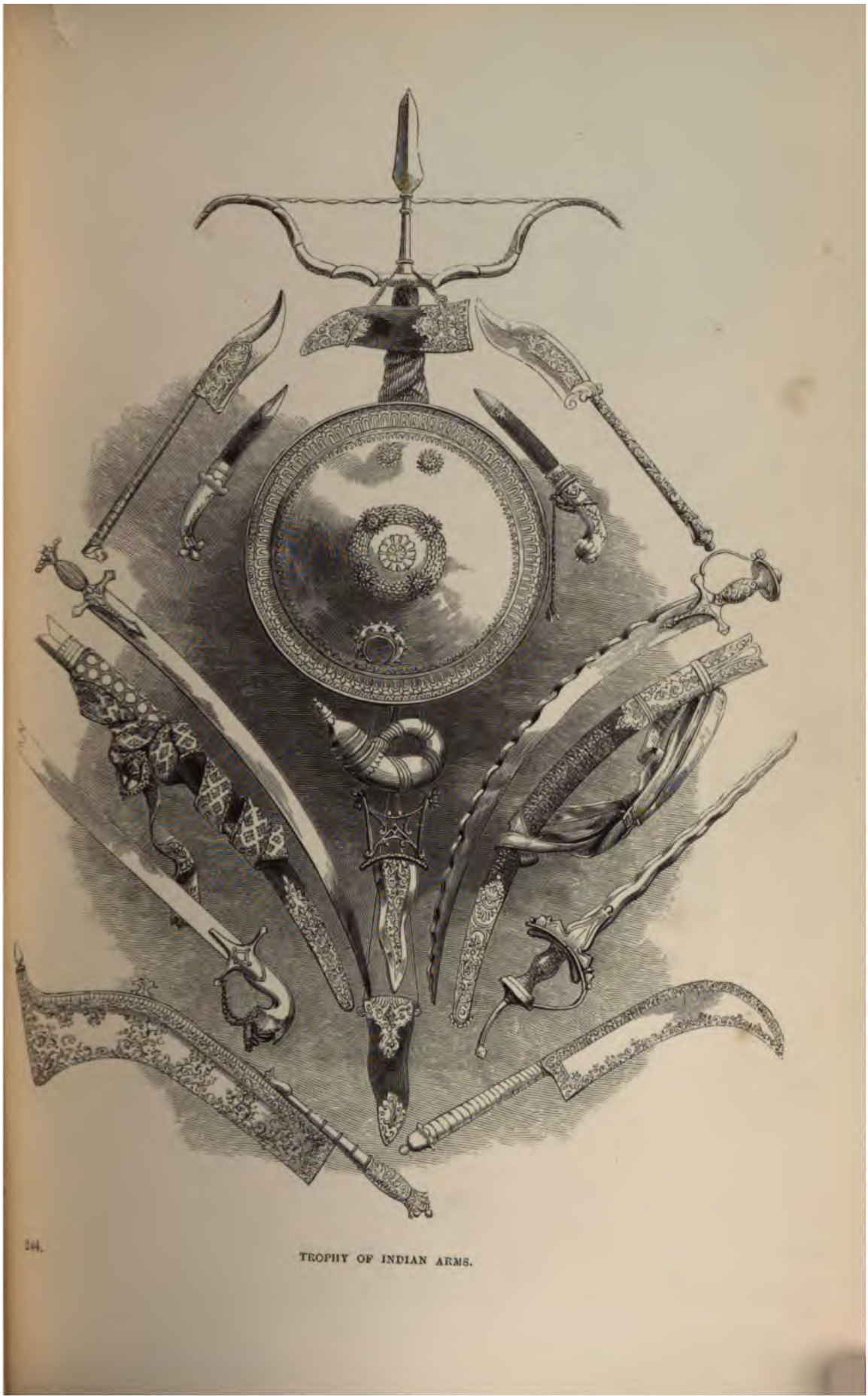
1 Bazaar cart, or gharree. This vehicle has been much improved since the European camps have been established. They are used for the transport of goods from station to station, and for carrying timber. Generally drawn by two bullocks.

2 Cotton press. There is no description of the cotton press.

3 Oil mill or ghannah, used for the purpose of expressing oil from different kinds of seeds. This machine is drawn by one, two, or three bullocks, according to its size. The most common size is for two, and a pair of buffaloes are the animals generally used. The block of wood excavated is first set into the ground, and firmly fixed; the pole or friction shaft is then introduced, and the portion with the small chain on it is then adjusted by placing the top of the friction pole into a small hole made for the purpose. The seed for oil is then placed in the hollow of the block, and when the oil begins to ooze from it, it is dipped or mopped out by a small bundle of rags, and the oil squeezed from this into a vessel. Each portion of this machine is numbered so as to correspond with the block or principal portion.

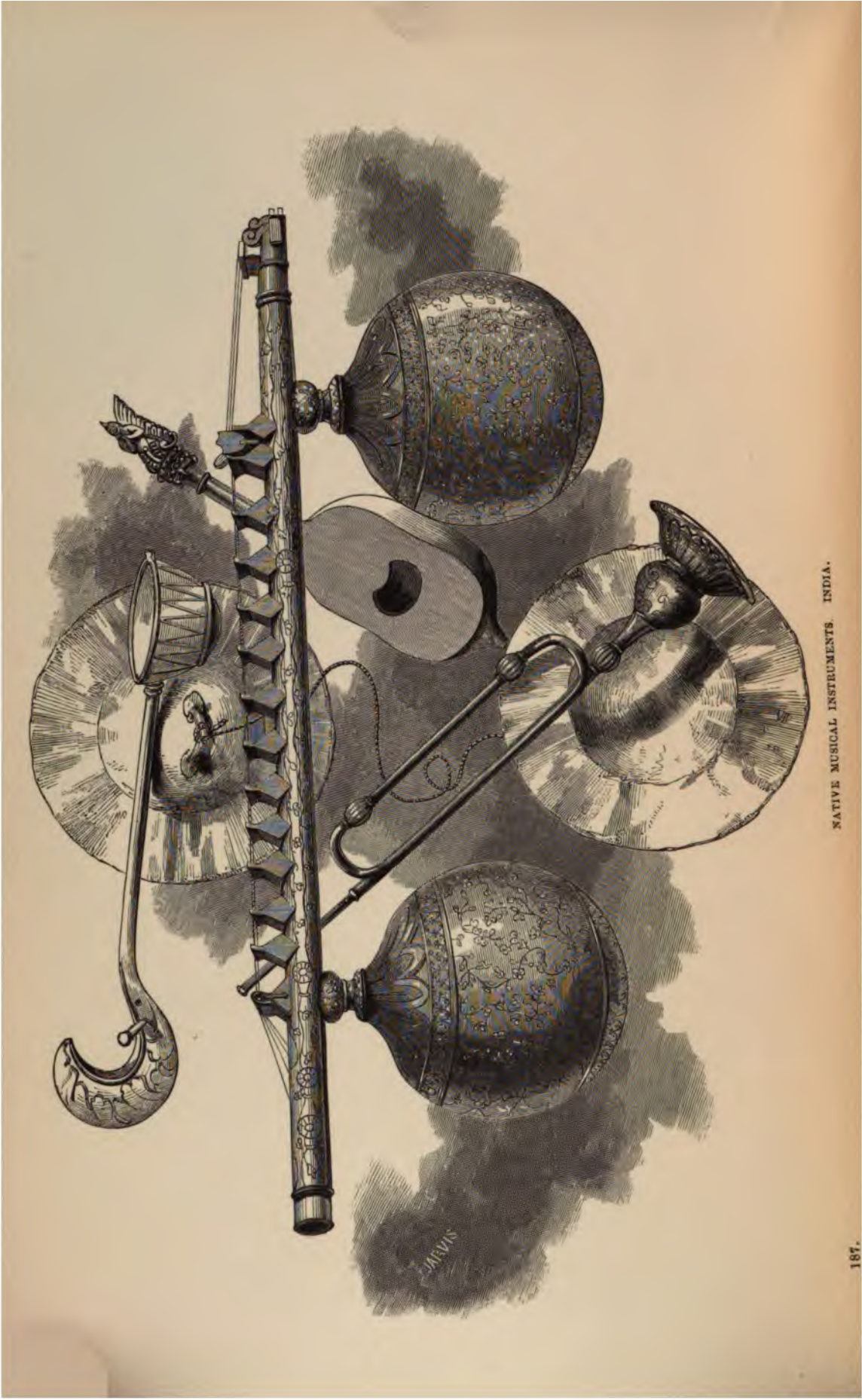
4 Wuddars cart or gharree. These are frequently made without one particle of iron in their construction, and drawn by two buffaloes. They are used by a peculiar race of people, called Wuddars, who never live in houses, but travel from village to village, and find employment in supplying the inhabitants with stone, timber, and other materials for building, which they bring on these carts.

5 Thrashing floor or kullie. This model does not rightly represent the kullie, as it is simply a circle cleared on the bare soil, with a pole set up in the centre to fasten the bullocks to, as many bullocks as the ryut has; often his cows and milch buffaloes are fastened to it and used.





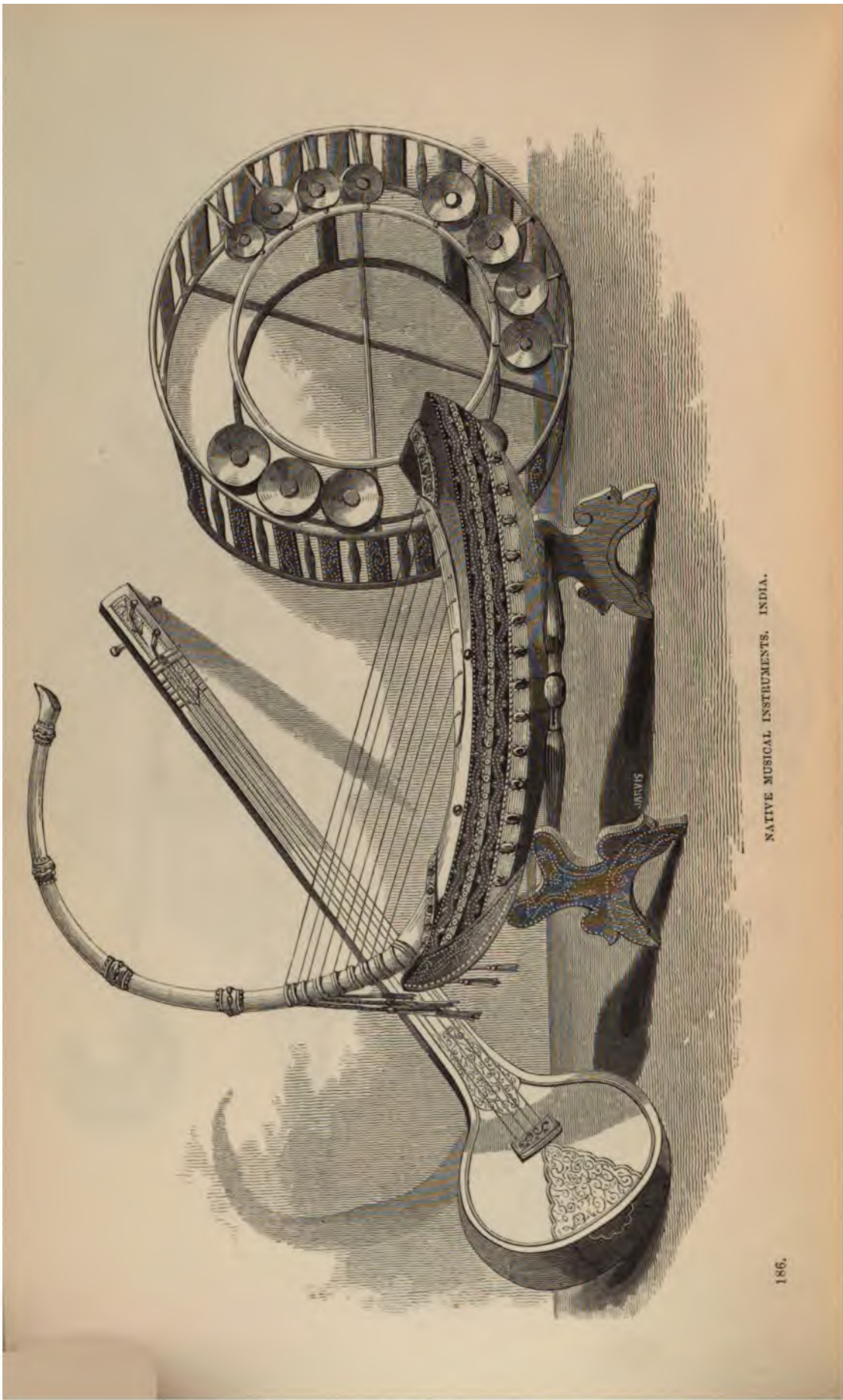




NATIVE MUSICAL INSTRUMENTS. INDIA.







NATIVE MUSICAL INSTRUMENTS. INDIA.





1875  
JEWELLERY, BRILLIANTS AND RUBIES. RUSSIA.

The Mungora and Akree are used in moving up the grain stalks whilst the bullocks are moving round.

6 Farm cart or gharree, or coontee for six or eight bullocks. Farm cart or gharree. Six, eight, ten, and sometimes as many as twelve bullocks are harnessed to these carts; they are used for all farm purposes. The small bundle of things marked with its number will fit it up for carrying grass, or hay, or grain in sheaf. It is looked on by the natives as a perfect fortune to have one of these in the family, and they are handed down from father to son as such.

7 Pair of bullocks. There is no description of the kind of bullocks.

8 The plough, kuntee, or nagur. This implement is but seldom used in the black soil; and when used is really of such little service to the land, that the time is nearly thrown away. It is drawn by two bullocks, the man generally keeping his foot on the plough to keep it in the soil.

9 Coontee or ballisall. Indian harrow or ballisall. This is similar in construction to the coontee, but the iron blade is made narrower and lighter; its use is to follow the coorgee in planting; drawn by two bullocks, it levels the soil, covers in the seed, and, if properly handled, does its work perfectly.

10. Coorgee, or drill plough, for planting rice. This implement is drawn by two bullocks, and the seed is placed by the hand into the cup at the top, when it passes through the bamboo pipes into the ground.

11 Coorgee for planting wheat, &c. This implement is drawn by two bullocks, and fed with the grain in the same manner as the rice coorgee. The bamboo pipe attached is used in the planting of cotton or dhall, when a woman or boy, taking it in their hands, walks after the coorgee to which it is fastened by a rope, and passes the seed through it into the earth. There is often two and three to each coorgee.

12 Cart man.

13 Hoot, or rice weeder. This implement is drawn by two bullocks, and used for stirring the soil among the rice plants, when their tops are just above water; each tooth passing between the rows of plants, it tears out the weeds.

14 Coorgee for cotton. Coorgee, used for planting cotton, where the land is grassy or soil heavy. Its only difference from the other being its strength, and having the teeth further asunder.

15 Yellie coontee. Indian weeding harrow, for jawaree, grain, and other dry grains. These are drawn in pairs by two bullocks, one man to each coontee, which he guides by holding the handle of the implement in one hand, and in the other a small stick with a fork at the end, which he presses down on the coontee. The stalks of the grain pass through the opening between the two irons.

16 Yellie coontee, or weeding harrow, for cotton. This is similar to the one used for grain, but is passed only between the rows.

17 Halka for grass. Used in the rice-fields, prior to planting, to remove weeds and grass that may be lying loose on the soil; drawn by bullocks.

18 Indian harrow, coontee or goontee. This is a very useful implement, and were a good English plough used before it, the soil would be well prepared. They are of different sizes, with two, four, and sometimes six bullocks, the drawer standing on the implement.

19 Byle phullee. This is drawn over the land, in dry weather, after the soil has been ploughed or coontied, to level and break down the inequalities in rice fields, and is generally drawn by two bullocks. It is simply a plank to which a rope is fastened by two iron rings, a man holding it nearly perpendicular, so as to catch the high portion of soil, and draw it to the hollows.

20 Oil-mill man.

21 Haut fulla. The same as the foregoing (No. 119), but used by manual labour, one man drawing it along, whilst it is held perpendicular by a second.

22 Heudora, or clod-breaker. This is drawn over the

fields to break the clods, a boy or man generally sitting or standing on it to add to its weight.

Goota. This is used after the hoot (No. 13), and is intended to bend the young plants down into the water. It is drawn by bullocks at a good sharp pace across the rows of plants, and which is said to make them grow stronger.

23 Rake for kulla. No description of the rake for kulla.

24 Karta. There is no description of karta.

25 Kudlie or pickaxe. Those in use in this part of the country are of very rough make, but do not differ in name or use.

26 Pau Kudlie or hoe, otherwise called salkee.

27 Saul and Rhaut. Saul: this is used to lay out the yarn after being spun, and from which it is formed into hanks by folding it over the elbows.

Rhaut or spinning wheel. In this process the woman sits down, with one leg extended as the figure represents, the fore-finger of her right hand is placed in the small hole in the handle of the rhaut which she twirls round, and with her left attaches the bit of cotton to the spindle, drawing the hand back as the thread spins out.

28 Coorpa or grain hook. There is no description of the coorpa.

29 Coorpa or grass hook for cutting grass.

30 Coorpa for weeding. These three all bear the name coorpa, and only differ according to the fancy of the owner; they are of the most miserable manufacture, and generally worth a few pice.

31 Akie. There is no description of akie.

33 Coorpa or cleaning knife. Used in the removal of the soil from the coonties whilst at work; a very simple and paltry instrument. Knives, however, being scarce among the natives, this instrument is often made very sharp, and kept for the purpose of cutting rope or other things as required.

Models of Agricultural Implements and Mills used by the Natives of Sattara:—

1 A kind of harrow, used in planting sugar-cane plants, and keeping in order the fields of the same.

2 Chowphunnee cooree, used in sowing small grain, such as "warree" (a kind of rice), &c.

3 Plough, used in ploughing ground.

4 Trephunnee used in sowing large grain, such as gram, &c., like No. 2; is a kind of drill plough.

5 Pair of Koluppee, used in weeding grass, &c. in a grown field.

6 A kind of harrow, used in levelling the ground after it is ploughed.

7 Regtey, used in planting tobacco and chillie plants.

8 A kind of harrow, used in spreading manure in fields.

9 Oil mill, used for extracting oil.

10 Sugar-cane mill, used for expressing the juice of sugar-cane in juice.

11 Wheel, used in drawing water from wells.

#### CLASS X.—Musical Instruments.

Guitar, kettle-drum, sarindah or fiddle, tomtom, trumpet, flute, cymbals, &c., from Moorshedabad.

Collection of Musical Instruments sent by Baboo Futteh Narayun Sing, from Benares:—

1 Been. 2 Tumboora, a kind of drum. 3 Surroddh. 4 Sitar. 5 Pukhoujl. 6 Dhole. 8 Two dhookurs; three shandees, and a pair of jhanjh (used in concerts). 9 Sarungee and bow, or Hindoostanee fiddle. 10 Sarindah and bow. 11 Chikarah and bow. 12 Khunjooree.

Several sorts of musical instruments, from Nepal.

Kind of kettle-drum, and toogna, from Bhotan.

Two guitars, contributed by the Rajah of Jodhpore.

Musical instruments, model of a tsigu wigu, and one complete, &c., from Moulmein.

Dyak violins, and Kayen guitar—Borneo.

Tsoug, or harp, tin box containing cymbals, model of a harp, patala, patma, or Burmese drum, cymbals used in religious ceremonies, &c., from Moulmein.

Set of musical instruments from Java, including gongs.

CLASS XI.—*Manufactures.—Cotton.*

Various pieces of plain and figured muslins, from Dacca. Various pieces of plain, bordered, flowered, and spotted embroidered muslins, from Baboo Soorop Chund Doss of Dacca.

Table-cloths, towels, dosootee and mosquito gauze, from Beerbhoom.

Table-cloths, napkins, and towels, from Moorshedabad.

Various pieces of cloth sent by the Maha Rajah of Nagpore; also a few from the Resident, manufactured in the dominions of His Highness the Maha Rajah of Nagpore. The blue colour is obtained from indigo; the green from indigo and the seed of the chukora, but the dye is not lasting. The scarlet is dyed with kossom. The yellow colour is formed of the flower of the hussinga, which is boiled with a little turmeric, and the thread is dyed previous to the weaving of the fabrics. The dark red is formed of indigo and safflower.

Pieces of towelling, table-napkins, cotton cloth, diaper, chintzes, and muslins, from Lahore.

Pieces of close-wove muslin, plain and cross-barred, from Bengal.

Gingham, five sorts, from Azimghur.

Nepaulce check for making quilts, from Nepaul.

Various cloths for dresses; carpeting, handkerchiefs; and different colours of cotton cloth, from Nepaul.

White cloth, used by Newars in funeral ceremonies to wrap up the body of the deceased; and red cloth, used by Newars in marriages and ceremonies, from Nepaul.

Twelve sorts of "Dorea" cloths, variously designated, and for different purposes, from Nepaul.

Canvas, for bags, &c., and threads of different colours, for making cloths, from Nepaul.

Coarse cotton cloth, worn by field-labourers, and exported to Ceram and New Guinea.

Cotton cloths, native produce by native tribes, Borneo, N. W. Coast.

Cotton cloths and tapes, from Celebes.

Cotton cloth, unbleached, from Boutan.

Cloth, from Sumatra.

Several pieces of cotton cloths, weft native's, warp English, and native dyes, from Java.

Cloths, presented by his Highness the Sultan of Linga.

Bolt of cotton canvas, Bengal.

Naga cloth (cotton), white, black, and red, for coverings and chudders; (sheets,) from Assam.

Four pieces of cloth Mahmoodees, two dhooties, white turban Mundeel, manufactured in the dominions of the Rajah of Dholepore, in the state of Rajpootana.

Doriaya, Phoolkaree, Meetha, fine cloths for dresses, manufactured in the State of Gwalior, and contributed by His Highness the Maharajah Rao Scindiah.

Doputta, Patul, cloths worn in lieu of shawls by ladies in Gwalior, and contributed by His Highness the Maharajah Rao Scindiah.

Dress pieces, called "pugrees," for turbans, manufactured in the dominions of, and contributed by, the Rajah of Jesselmeer.

Doputtahs, dhooties, one pugree, three muslins, manufactured at Chundeyree. The cloths are much worn by natives of high rank; they are costly, and preferred to the finest European fabrics of a similar description.

Piece of coarse checked cotton, coloured; carpeting; guzzer, a sort of calico; garah, for dresses; chintz coverlets; quilted coverlets; lehafs; doosootee, for bedding and tents, &c., from Agra.

Garrah, a cloth manufactured at Agra. The trade in these cloths was formerly very great, but it has fallen off much since the introduction of English long cloths. The annual manufacture at present does not exceed 10,000*l*.

Calico, *garrah*. This cloth is manufactured throughout the division of Agra, and is chiefly used by the poorer classes; the annual consumption of it is about 50,000*l*.

Calico used by native ladies for dresses, Ganga, Sarce, and Dhooties, manufactured in the division of Agra. The annual consumption is estimated at 20,000*l*.

Twelve chintz coverlets, Pullongposh, Furdhs, Lehafs, and Doosooties, used for quilted bed-covers. They are chiefly manufactured at Futtelghur and Coonoj, in the division of Agra, and their annual consumption is estimated at 10,000*l*.

Cotton cloths, from Sindh.

Six sorts of cotton cloths; cotton cloths for pantaloons and waistbands, from Belgaum.

Cotton cloths, from the Rao of Cutch.

Chintz mantle, from Khyrpoor.

Two sorts of cotton sail-cloth, from the Rao of Cutch.

Cotton fabrics from Ahmedabad, Surat, Sindh, Belgaum, Cutch, and Khyrpoor. They are manufactured from cotton chiefly grown and spun in the countries in which they are woven. Hardly any more are made than are required for home consumption. English spun-cotton is much used in Sindh, Cutch, and Surat.

Pieces of cotton cloth, striped and chintz pattern, from Scinde.

Fine punjum long-cloth, manufactured at Jugginpettah, in the Northern Circars, from Mr. Masters.

Muslin, from Arnee.

Muslin, manufactured at Oopada, in the Northern Circars.

CLASS XII.—*Woollen Manufactures.*

Cloth shawl, worn by natives, from Rampore.

Pieces of cloth, from Lucknow—His Majesty the King of Oude.

Woollen cloth, striped and checked, kid cloth, Cashmere and shawl cloths, from Lahore.

Box of wool and piece of camel cloth, from Scinde.

Superior blue cloth, from South Arcot.

Cumblers, blankets, &c., from the Ceded Districts.

Blanket, half-breed merino and butt wool, from Hoonsoor in Mysore.

Blanket, half-breed wool and of common country wool, from Hoonsoor in Mysore.

Wool thread of shawls, from Bhotan.

Piece of Pachin woollen cloth, from Jaomla.

Piece of goat's wool, of various colours, from Shiling.

Piece of goat's wool, of Toos, from Nepaul.

Cloth made by the Kirantees in the East, from Kirant.

Cloth of coarser cloth, from Nepaul and Bhoolan.

Woollen string, Hakpa with Ghoongroo, from Nepaul.

Blankets of wool and Asun wool, by the Rajahs of Jodhpore, Jypore, and Jesselmeer, from Marwar.

Several sorts of blankets, from Bhotan and Kachhar.

Specimens of articles commonly imported from Gartok to Bageswar, by the Jwari Bhotiyas, brought by Lieut. Strachey, Bengal Engineers, from Tibet:—

Kashmiri Pattu, of coarse shawl wool, from Kashmir *viâ* Ladak.

Coarse brown shawl, of goat's wool, from Balti.

White shawl, of goat's and ibex wool, from Balti or Kashmir.

The same, made up into a gown. Thick woollen stuff in coloured stripe, from Ussang.

White and coarse Nambu, for clothes. Coarse grey Pats; black and coloured stripes, for sacks, &c., from Nari Khorsum.

Black Nambu, for clothes, from Ladak.

Linzi.—Coarse China silks, from Yarkund.

Felted cloaks, called Barancees, from Goruckpore.

CLASS XIII.—*Silk and Velvet.*

Zhip (Turk). Sikim (Ladak).—Silk from Khoten.—Lieut. Strachey.

Silk thread and twine, and pieces of silk cloths, variously designated, from Moorshedabad.

Printed silk handkerchiefs, twelve varieties. Choppas. The silk handkerchiefs are made at Berhampore, in the division of Moorshedabad; the printing done near Calcutta. They form an article of considerable export to Europe and America.

Cossimbazar silk corahs, and skeins of raw silk.—Messrs. Vardon, of Soojapore.

Pieces of silk handkerchiefs, from Moorshedabad.

Two bundles, containing two seers of coloured silk.

Striped silk, of sorts; plain silk, of sorts; silk scarfs; and silk cloth; from Lahore and Rajah of Pattiala.

Silk scarfs, striped silk of various sorts and colours, &c., from Lahore.

Six varieties of Tussar silk cloth, produced in the district of Bhauulpore, in the division of Patna.

Twilled silk, cloth Tussar, manufactured in the district of Boerbhoom, in the division of Moorshedabad.

Raw and coloured silks; raw silk and thread from the castor-oil worm; Mungah and Ariah silks; scarfs; waist-cloths; and bed-curtains; from Assam.

Pieces of different coloured silk, complete assortment of raw silk, and piece goods.—D. Jardine, Esq., Calcutta.

Lady's flowered and Tartan silk dress piece; two pair of silk scarfs, with flowered border; from Bancoorah district, Moorshedabad.

Red and yellow satin.—Manufactured in Cutch. The raw material from China. The silk is dyed in Cutch.

Silks (Cutch). Manufactured chiefly for home consumption. The raw material from China and Calcutta. The silk piece called "Elacho" is manufactured principally for exportation to Zanzibar.

Silk gown pieces, from Tanna. These are imitations of English silks. The raw material comes from China, and is dyed at Tanna.

Silk (Sindh). Chiefly manufactured for home consumption, from raw material brought from China.

Loongees (Sindh). Two were brought from Kurrachee, and two were expressly ordered for the Exhibition, and were manufactured at Tatta.

Piece of silk, from Poona. This is a very curiously woven silk, being of two colours, one side red, the other green; it is called "pytancee." The raw material is brought from China or Calcutta, and dyed in Poona.

No. 2 are nine patterns of silk of an inferior manufacture to that mentioned.

Silks (Surat). These are manufactured in China, and dyed at Surat. No mention is made of the quantity manufactured for home consumption, or for exportation. They are the common patterns worn by the Parsee women in Bombay.

Purple silk, scarlet on one side, and small patterns of silks for choories, from Ahmednuggur. These are made at Yeola, a place famed for the manufacture of silks. The value of the silks made annually at that place is stated to be from two to two and a half lacs of rupees.

"Of this, a quarter of a lac in value is consumed in the Ahmednuggur Zilla; half a lac is sold at the fair of Mo-beem, in Kandish, for transmission to Indore, Oojien, Cutch, Bombay, Surat, and other places in India; quarter of a lac goes to Berar; 10,000 rupees worth to Sholapore; quarter of a lac is made up into borders, &c., of cotton piece goods locally consumed in the neighbouring districts; and the balance is said to consist of silks dyed, but unfinished, which are exported from Yeola to other places for completion."

"The raw silk comes from China. The dyestuffs, except a portion of indigo (produce of Kandeish), and a few unimportant ingredients, are likewise imported through Bombay."

Pieces of ribbon, from Ahmedabad. The materials from which these are made, and the red dye, are imported from the places just mentioned. The value per annum of those manufactured for Ahmedabad amounts to 20,000 rupees; of those manufactured for exportation, 100,000 rupees. They are sent to Baroda, Bombay, Rajpootana, Gwalior, and all parts of Guzerat.

Raw silk (three specimens), from Azimghur.

Silk manufactured at Bangalore.

Different colours of silk threads, from Cuddapah.

Various pieces of coloured silks, of different designs and patterns, from Nepal.

Pieces of red silk, from Bhotan.

Pieces of yellow, orange, and black silk, from Nepal.

Salendong silk, from Acheen, Sumatra.

Sarongs or petticoat silks, from Palembang and Acheen, Sumatra.

Silk cloth, from Camboja.

Trousers' silk, from Acheen, Sumatra.

Silk tape, from Celebes.

CLASS XIV.—*Manufactures from Substitutes for Flax, Hemp, &c.*

Two coils of Jute rope; bolt of Chandernagore hemp canvas; bolt of hemp and cotton canvas—Bengal.

Rigging of Bombay hemp; warm and cold register coir rigging (first manufactured in India); Jubbulpore hemp; Dhanchee hemp rope; and pine-apple flax rope—presented by the manufacturers, Messrs. W. H. Harton & Co., of Calcutta—from Calcutta.

Gunny or sackcloth, from *pat*, or *Corchorus olitorius*.

Gunny and other cloths from plantain fibre, from Madras.

Canvas from Wackanoor or Wackoo nar fibre, from Travancore.

Two bundles of cotton, canvas, and rope, from Bengal.

Specimens of cordage from fibres of various plants.—(See Fibres, Class IV. (F.))

Ropes prepared from the *Dhanchee*, or *Æschynomone cannabina*.—Messrs. Thompson and Co., of Calcutta.

Cordage from *Butea frondosa*, Beerbhoom.

Cordage from *Bauhinia racemosa*, Bhauulpore.

Cordage prepared from vegetable substances by the natives of the province of Arracan.

Bark cloth, manufactured by the Semangs or Oriental negro tribes, from Kedah, Malay Peninsula.

Bark cloth, made from the bark of the paper mulberry, from Kailli, west coast of Celebes.

Bark cloth, made from Papyrus bark, from Java.

Cloth manufactured by Arafuras from native fibres.

CLASS XV.—*Mixed Fabrics, including Shawls and Scarfs.*

Silver enwrapped, plain gilt, and silvered turbans—from Calcutta.

Fine cloths for dresses, shawls, and turbans; gold embroidered cloths worn by Rajpoots, and used for turbans—sent by Maha Rajah Rao Scindiah.

Several pairs of sheets, embroidered with gold and silver, and gold and silk, and a turban with gold ends—from Bengal.

Piece of gold cloth; silver tinsel stamped; gold edging; and silver edging, rose coloured—from Benares.

Head covering worked with gold and silver tinsel; the same, with gold dyed purple tinsel; the same, with sky-blue bobbinet spangled tinsel—from Benares.

Gold embroidered manufactures—from Benares.

Silk dress-piece, worked with gold and silver; scarlet silk dress-piece, worked up with silk in needle in imitation of China work—from Calcutta.

Embroidered flowered silk and silk embroidered saree, from Agra.

Embroidered shawls and embroidered scarfs, from Dacca.

Embroidered and net scarfs; net square and three-cornered; neck scarfs; muslin, embroidered in gold and in silver; net scarf, embroidered in gold for head-dresses; net scarf, embroidered in silver—from Dacca.

Gold embroidered muslin and net scarfs; net scarf, embroidered in silver; Jamdane scarfs—from Dacca.

Rich kincoob or brocade, &c., from Benares, exhibited by Baboo Deo Naryan and Gopinauth Debeersaad, &c.

Cashmere shawl, worked in green, crimson, blue, and scarlet, and embroidered in gold and silver.—A. Emerson, Esq.

Long shawls, red and green, and worked with needle; square cashmere shawls, from Loodianah.

Long and other shawls, from Cashmere.

Long shawls, white; square shawls, black, blue, and figured, from Maha Rajah Goolab Sing, of Cashmere.

Tinsel tape, ribbon, and thread, from Lahore.  
Caps, embroidered with gold and pearls; with other fabrics, from Benares.

Half shawls and scarfs worked with gold, silver, and silk, from Delhi and from Rajpootana.

Long, square, and small shawls, green, blue, and black; worked shawls, red, with pearls, from Cashmere.

Shawls, black, white, and red; shawl scarf—from Rajah of Pattiala.

Infant's robe, embroidered grass cloth—from Mrs. Marshman, Serampore.

Muslin mantillas, jackets, and collars; pine-apple cloth and collars; muslin caps; pine-apple cloth caps; frock bodies and sleeves—embroidered; worked by natives of Calcutta.

Waistcoat dhootee, cotton and munga mixed; chupeun or overall coat; scarfs, gold bordered, and embroidered in gold—from Assam.

A pulla, doputta, &c., for dresses, from Agra.

Shawls of various colours and patterns—from Rajah of Dholepore.

Straw-coloured, lilac, red, and crimson kincobs; red and white mundeels; striped, green, red, and saree red lailahs; maymoodee; and dhoties, with silk border—from Rajah of Dholepore.

Mooltan and cotton and Cashmere scarfs, from Lahore and Cashmere.

Scarfs of different colours, from Maha Raja Goolab Sing of Cashmere.

Scarfs, &c., from Huzara. Major Abbott.

Figured cloth, from Khyrpoor.

Waistcoat piece; cap pieces; tinsel ribbons; bed strings; strings for the hair, from Lahore.

Mixed silk and cotton, imitation Sultaree silk.

Mooltan tambour work; Mooltan busmedars.

Boorhanpore fabric brocade, and pattern of same, from Indore.

Fabrics from Boorhanpore. "No. 1 was made to the order of her Highness the Baizee Ball, for one of the presents to Maharajah Sindiah on his marriage. The price charged her Highness was 1,000 rupees (Chundaree); but the real value is 550 rupees (Cor).

"Nos. 2 and 3 are also manufactured at Boorhanpore. The thread (cotton and silk and gold), of which they are made, is prepared at Boorhanpore. No mention is made of the places from which the materials originally come."—*Bombay Report*.

Brocades, silk and gold, from Ahmedabad.

Fabric of silk and gold from Ahmedabad. The silk from which these brocades are manufactured comes from China, Bassorah, and Calcutta. The gold and silver thread is manufactured at Ahmedabad. The cochineal for the red dye from England. The quantity of these brocades, manufactured for home consumption, is about 40,000 rupees' worth per annum. The average value of that exported, about 300,000 rupees' worth per annum. They are exported—to India, Bombay, Baroda, Poona, Gwalior, Hyderabad, and Rajpootana. Out of India—to Sindh, Cabool, Arabia, Persia, and China.

Square shawl from Seth Khumr Chumd, of Ahmedabad.

Loongee, with gold thread border, and gold thread, green, red, white, and yellow; the same, red, black, and yellow, from Scinde.

Pattern green and orange silk, with gold thread; piece of green silk, with gold thread—from Ahmednuggur.

Silk scarf from China produce, and raw pine-apple silk, chickoned, and worked by Mussulmen; worked muslin dresses; beetle-wing dresses; lace scarf—from Madras.

Fine cottar muslin, with gold lace border; cottar muslin, unwashed, with gold lace border—from Travancore.

Kincob silk, from Trichinopoly.

Cloths woven, plain red, with silk; cloths woven, purple and black; cloths woven, red, with lace—from Guntoor.

Scarfs, embroidered with gold thread, from Tringancee and Pabang, Malay Peninsula.

Silk handkerchiefs and shawls, from Tringancee, Lingy, and Timor.

Scarfs, cotton, and dyes of native growth; raw silk from the continent of Asia—from Sumatra.

Salendongs silk, from Acheen, Sumatra.

Embroidered cloth, from China, and embroidered tape, from Celebes, forwarded from Singapore.

Turbans and lailahs—from Tonk.

Pieces of silk and cotton manufacture.

Piece of chequered cloth, silk and cotton.

CLASS XVI.—*Leather, including Saddlery and Harness; Skins; Furs; Feathers; and Hair.*

Embroidered elephant trappings in velvet, and frontal piece; embroidered awning in velvet, with embroidered cloth carpet; saddle-cloth in green velvet, and embroidered in gold, with head-stall to match, and rein—from Moorshedabad.

Mahratta saddle embroidered with gold and silver thread, and accoutrements complete, as used by the Mahratta nobility—from Maha Rajah Rao Scindiah.

Horses' bits; reins for a bridle; saddle-cloth stall and crupper.

Saddle-cloth, green and gold, with head-stall and crupper, all studded with gilt nails—from the Rajah of Kotah.

A complete set of single harness, belonging to the "Ekka," or native conveyance, No. 1365, manufactured in the division of Patna. Presented by Syud Luft Ali Khan.

Saddle-cloth (floss silk and woollen)—from Kotah.

Mahratta leather and water-bag.

Embroidered saddle from Khattiarwar. This is one of the saddles used by the Khattys of Khattiarwar, the descendants of a tribe of freebooters, whose horses were famous for their endurance, and the extraordinary length of marches that could be performed with them.

One set of harness, for gig or stanhope; also two pair of boots, as specimens of the workmanship of Calcutta workmen. "The harness is entirely of country materials, with the exception of the japan leather, which is English. The leather is of the up-country bullock hides, tanned in our own tan-yard, in the neighbourhood of Calcutta, with the 'bauble' bark, called, we believe, the 'prickly mimosa;' the plated furniture and arms of Great Britain are made up on our own premises by native artists. One pair of boots are made with French japan leather and morocco legs, and the soles, &c., of country leather; the other pair of enamelled leather of our own manufacture, and entirely of country materials and native workmanship."—*Extract of a letter from Messrs. James Monteith & Co., dated Calcutta, 7th March, 1851.*

Bengalee-made horsewhips.

Buffalo leather, manufactured for the purpose of army accoutrements; Bengal cow-hide, and a calf-skin, both tanned with the bark of the Babool tree, dressed and patent enamelled, for the purposes of carriages, and boot and shoe makers; specimens of Bengal cow-hide, similarly tanned with the same substance, the former dressed black, the two latter brown; half a buffalo-hide, tanned with Babool bark, suited for boot and shoe makers, and machinery; half a Bengal buffalo-hide, similarly tanned, and suited for harness and other purposes; half a buffalo-hide, used for belts, and other purposes of machinery; half a buffalo-hide, dressed and blackened for the preparation of horse harness; Bengal cow-hide, used in the preparation of saddlery; Bengal calf-skin, dressed brown, for shoe and harness-making purposes; Bengal sheep-skins, for shoe and harness-makers' purposes—from Messrs. TRILL & Co., of Calcutta.

Tanned bison skin—from Mysore.

Buffalo-hide, tanned and dressed black; bullock-hide, tanned and dressed black, for shoe uppers; tanned and dressed brown and black, for caps, bags, &c.; bullock-hide, tanned and dressed, buffed; Neilghery buffalo-hide, buffed—from Hoonsoor, in Mysore.

Dyed hides of fine colour—from the Rao of Cutch.

Saddle, &c., complete—from Lahore.

Camel's saddle, and horse saddle, with trappings complete—from Marwar.

Raw feathers; boas; artificial flowers; tippets, manufactured by natives; grey, white, black, and swansdown boas; grey and white muffs; Commercally muffs; fur muffs for the neck; victorines—from Commercally, Bengal.

CLASS XVII.—*Paper, Stationery, Bookbinding, Printing, &c.*

Paper made from *Daphne cannabina*—from Kemaon. It is remarkable for its strength, and affords better protection against dampness than wax cloth.

Kamptee paper—from Assam.

Sheets of paper, Nepalee Kaguj—from Nepal.

Sheets, both coarse and fine, and of very large size, made from the inner bark of *Daphne cannabina*, exhibited by Lieut.-Col. Sykes and by Lieut. Strachey.

Rolls of coloured paper—from Lahore.

Paper, from plantain fibre, and from large aloe or agave—from Dr. Hunter, of Madras.

Nine sorts of paper—from Ahmedabad.

"Country paper," as it is termed, is manufactured to a great extent at Ahmedabad, and forms a considerable article of export from that city. The manufacturers admit that upwards of 20,000 rupees' worth of paper is annually exported to Bombay alone, and about 15,000 rupees' worth to Baroda. There are small manufactures of country paper at Kairie, Baroda, and Selaseer, but chiefly from refuse of paper and very little raw material, and therefore the article does not turn out good; whereas, at Ahmedabad, paper is manufactured from hemp tant from Merywar. Soap from the town of Besuhuggur, and soda (sajee khor). There are about 250 paper mills, or pounding machines, worked by the feet. This manufactory gives employment to upwards of two thousand labourers of all ages daily. There was a very fine kind of paper formerly manufactured expressly for posting letters and bills of exchange; but since the introduction of fine letter-paper from Europe, this sort of paper is not manufactured. A few quires can now be obtained as specimens of the manufacture of former days."

Specimens of bookbinding by a native of Trichinopoly, exhibited by T. E. J. Boileau, Esq., Bombay Civil Service.

CLASS XVIII.—*Fabrics of different kinds, shown as specimens of Printing or Dyeing.*

Though the arts of dyeing and of calico-printing have been practised in India from the earliest times, and by some are supposed even to have originated there, no goods have been sent expressly as superior specimens of either the one or the other art. But among the cotton, silk, woollen, and mixed fabrics exhibited as Classes XI., XII., XIII., and XV., are many beautifully-dyed articles, and a great variety of prints which may be admired for the taste and elegance of their patterns. The early esteem in which these were held in Europe, is evidenced by the oriental names of many of these Indian goods being applied even in the present day to these English imitations. The art of dyeing is still in a rude state in India, as far as the methods adopted are concerned; yet if we look at the results which are attained, they are not to be despised even by the side of the scientific dyeing of the west. But in the management of colours, the skill with which a number are employed, and the taste with which they are harmonised, whether in their cottons or their carpets, their silks or their shawls, Europe has nothing to teach, but a great deal to learn.

CLASS XIX.—*Tapestry, including Carpets and Floor-cloths, Lace and Embroidery.*

Gold embroidered velvet carpet, with a long and two

square pillows, forming a sort of throne for native princes, from Moorshedabad.

Musnud cover or shawl, very richly gold embroidered.

Cotton carpets (*Satrunjees*) of different sizes—from Bengal.

Mirzapore woollen carpets; woollen and cotton rugs—from Mirzapore and Goruckpore.

Two cotton carpets—from Shah Ahmed of Sasseram.

Rug and hookah carpets—from Moorshedabad.

Cotton carpets and rugs—from Rungpore, district of Moorshedabad, and from Agra.

White, coloured, and striped blankets—from Assam.

Embroidered hookah carpets—from Bengal.

Richly embroidered carpets in gold; gold embroidered velvet carpet; embroidered velvet carpet—from Benares.

Cashmere carpet, silk—from Lahore.

Silk-embroidered carpet—from Mooltan.

Silk carpet, Cashmere—from Lahore.

Carpet, silk Cashmere—from Cashmere.

Carpet, cotton—from Mooltan, Lahore.

Carpet for silver bed to stand on; a large carpet, Cashmere; carpet—from Maharajah Goolab Singh.

Mooltan printed floor-cloth—from Mooltan.

Woollen carpets, mounted with silk—from Khyrpoor. These form a part of H. H. Meer Ali Morad's contribution, and were unaccompanied by any descriptive list.

Embroidered silks from Khyrpoor. They are sent by H. H. Meer Ali Morad. It is presumed that they were embroidered at Khyrpoor, on manufactures of the same district.

Large and small broad-cloth table-covers, embroidered with silver and gold thread; broad-cloth table-cover embroidered with silver thread; velvet chair-covers, embroidered with gold, from Sindh.

Table-covers, specimens of embroidery from Sindh. The cloth is from England—the silk from China. The town of Tatta is most famous in Sindh for this work.

Printed cotton carpet—from Ahmedabad.

Cotton carpet—from Ahmedabad.

Rugs, woollen—from Ellore.

Flowered silk carpet—from Madras.

Small woollen and silk carpets—from Tanjore.

Silver lace—from Lahore.

Broad black lace; broad, gold, and silver blonde lace; broad and fine lace—from Travancore.

An infant's robe of the finest grass cloth, and embroidered by hand, by natives of Serampore near Calcutta. Contributed by Mrs. Marshman, of Serampore.

Jackets, collars, caps, frocks, bodices, and embroidered mantillas, worked by natives in the city of Calcutta.

Chikun worked flowered muslin chudders, 2 pieces, worked by natives in the city of Calcutta.

A scarlet silk dress-piece, worked in imitation of China embroidery. Worked by natives in the city of Calcutta.

Silk scarf from China produce and pine-apple fibre, chikuned (embroidered) by Musselmans of Madras. Contributed by Mrs. Goodsir.

Handkerchief of pine-apple fibre. Contributed by Mrs. Goodsir.

(H) *Quilted or padded.*

A quilt, Razace, and two pillows, Takeeah. Manufactured in the dominions of the Maharajah of Jodhpoor, in the states of Rajpootanah.

A quilt entirely worked by hand. Contributed by the Rajah of Kota.

CLASS XX.—*Articles of Clothing, &c.*

From Bengal.—A Kamptee dotee or male dress. Pat dhootees, male dresses. Poo-soong, Pat silk, a female dress. Ranga, Pat sooria, native substitute for trousers. Pat rehas, scarf for females. Bogue pator surah or dhoty, native trousers. Pat meekla, female dress. Pat dhootees, male dresses. Areah for wearing apparel. Areah bhar kossar. Areah bor kossar, male and female dress. Reha female dress. Reha mikla female dress. Areah, coloured.



Mikla, coloured silk. Cloth, red and white. Gungera, red and white, for women's dress. Mikla, coloured. Munga areah, cotton cloth. Munga dhotee, for men. Munga mikla, for females. Munga rea. Munga rea, scarf. Mikla or Petticoat. Dhotee. Phakeel tartan.—From Gowhattee, in Assam.

Silk megghankhore for male dress. Petticoat. Handkerchief.

A wrapper worn by both sexes. A dress worn by nobility. A wrapper challah for nobility. Singpo bag, possa, and tactins.

Embroidered caps. Purse worked with tinsel.

Fan, worked in a variety of embroidery, with silver-gilt handle. Red silk strings for trousers, with gold and silver tassels. Sky-blue bobbinet scarf, worked with silver and silk. Crimson bobbinet scarf. Pair of crimson bobbinet scarves, worked with silk. Sky-blue bobbinet scarf, worked with silver. Orange bobbinet scarf, worked with gold. Black bobbinet scarf, worked with gold. Black bobbinet scarf, worked with gold and silver. Square scarf, white bobbinet silk. Orange scarf, gold and silver. Square scarf, orange, gold and silver. Square scarf, crimson, loose crape, spangled. Green scarf. Head-covering, set with bits of glass. Head-covering, worked with silk. Cloth boddlee dyed blue. Pair of cloth rings, ornamented with cowries, for securing the water-pot on the head.—Delhi.

Soosnee or quilt, worked by hand, and made of Ihatia patum.

Suit of a native gentleman's apparel, viz.: a gold figured muslin turban, according to the Bhoondee shape, a waistband to match; a pair of kinkob drawers, and a muslin vest—the usual dress of the Rajah of Boondie. Suit of ladies' apparel, viz.: a handsome petticoat, gold embroidered veil and head-dress, and a bodice worked with lace and tinsel. These articles form the usual dress of the Rajah and Ranees of Boondie in the Rajpootana States, and have been contributed by the Rajah.

Doputtas or garments worn by ladies of Jeypore, richly worked in silver, and printed in gold. Turbans, called Chundree and Lichruja, worked in gold. Sungahar handkerchiefs for tying round the head; chintzes for dresses; waistband cloths; and mantles or sheets worn over the shoulders.—States of Jeypore.

Ghoochus or blankets, a protection against rain. Chuckmahs or blankets. Blanket usually spread on the floor. Blanket with silk edging.

Native gentleman's apparel, viz.: two turbans, called Choongree, made at Kota; full-dress turban; waistband, selah, white muslin gold flowers; piece muslin, gold stamped; piece brocade kincob for drawers; and two pieces striped muslin, Doreeah, for jackets. Ladies' apparel, viz.—petticoat, green silk stamped with gold; head-dress and veil, gold bordered; red veil, figured; choolie or stays. Worn by the people of rank in Kotah.

Puggrees, or turbans, of Jesselmer wool.

Silver-worked scarfs. Silk scarfs, gold-edged, white, orange, and puce colour. Silk scarfs, yellow and plum colour. Cotton scarfs, from Lahore.

Women's and men's shoes. Cap and tassel. Head-dress worn by Akalis, Lahore.

Trousers, dresses, scarfs, and shoes, from Maharajah Goolab Sing.

Dress bodice, trousers, undergarment, sheet, pair of shoes, gown, bundle hair-strings.—Ranees Sookhan.

Cloak, sheets, turban, pieces shawl stuff, and scarf, jacket, pantaloons-strings, sets bed-strings, woollen cap, waist-ropes, Chumba dress, pair sheets, and turbans.—Raja of Pattiala.

Piece Major Abbot's Huzara Soojie cloth, Loongie. Caps embroidered with gold and pearls.—Benares.

Kareem man's dress. Poongas priest's dress, upper and lower garments. Burmese gentleman's dress. Kareem woman's dress, lower garment, and scarf. Burmese ladies' dresses of the second class. Upper garment of coloured cotton. Kareem male and female dresses. Sandals.—From Moulmein.

Crown, or tuj, as worn by the King of Oude; without jewels.

Mundil, or turban, as worn by the minister, prince, and members of the royal family; from the King of Oude.

Doputtas and other articles of dress. Puggrees, or turbans. Selahs, or double doputtas. Dhoties. Kochos, or kummur bands. Saries. Piece of common silk. Gold and silver embroidered slippers. Common slippers. Marhatta child's turban.—From H. H. the Maharajah of Nagpore.

Wearing apparel. Musquito curtains. Native ladies' dresses, of white and black watered silk. Set of bed-curtains, as used by the higher classes. Embroidered waist-belt. Coloured muslin turbans.

Native dresses. Duneys: cross-striped, &c. Gudka chent petticoats.—From Agra.

Delhi worked puchhassee in pearls.

Bengalee wooden sandals. Native-made slippers and boots.

Mahratta children's turbans, from Nagpore.

Native lady's bodice, richly embroidered. Waist-belt, embroidered in velvet and gold.

Shoes for men and women.

Waistcloths, called Dhotee. Petticoats, called Mackelah. Scarves, called Reha. Ornaments for turbans—from Assam.

#### From Madras Presidency.

Lady's scarf, English shape, from Vizianagram.

Lady's pocket handkerchief, of Indian produce, pineapple fibre, from Madras.

Lady's scarf, English pattern, from Vizianagram.

Native female clothes. Boys' tinsel and silk caps—from Vizianagram.

Caps (moplal), of sorts, from Calicut.

Bodices of different patterns, for natives, from Madras.

#### From Bombay.

A dress of a Cutch lady of rank, manufactured in Cutch, from the Rao of Cutch.

A complete suit—"The dress of a native (Mahomedan) female of rank, which has been made up and prepared by her Highness the Secundee Begum of Bhopal."

Dress of a Hindoo woman, whose husband is alive. Manufactured at Ranees Bidnoor, in the Dharwar Colliery.

Dress of a Hindoo widow, Belgaum.

Dhoter furuspatee used by men, Belgaum.

Cholees or khums, &c. Used for making spencers for women whose husbands are alive; also the dress called purkara, resembling aprons, for girls under five years of age. The raw material is brought from China through Bombay, and is dyed in the Southern Maratha country. These silks are manufactured almost entirely for local consumption.

Silk goojees, shirts and mantle, Scindee hats and fans. These articles from Khyrpoor are contributed by H. H. Meer Ali Morad.

Choolies, or bodices, and body garments, from Ahmednuggur.

Embroidery of Cutch. These four aprons have been worked on English satin, with silk imported from China.

Embroidered silk vests (Surat).—The fabric is woven at Surat, from China silk dyed there, and then embroidered and made into vests for the Parsee children of the place.

Boots and shoes (Sindh). These show the kinds of boots and shoes worn in Sindh and the neighbouring countries. They are from H. H. Meer Ali Moorad.

#### CLASS XXI.—Cutlery and Edge Tools.

Silver-mounted carving-knife and fork, in silver-mounted velvet case—from Trichinopoly. A. Freese, Esq. M.C.S.

Knife—from Cashmere.

Carvers and a set of dinner and desert knives of Indian steel, with buckhorn handles and silver ferules, made by a native iron smith at Trichinopoly, exhibited by T. E. J. Boileau, Esq., M.C.S.









Betel-nut cutters; pen knives—from Benares.  
 Barber's utensils; a case for instruments—from Bengal.  
 Knives (chhooree)—Nepaul—from China.  
 Different sorts of knives used by females—from Nepaul.  
 A knife; another sort (chipee) to cut wood; another knife, used by Mugar and Gooreng tribes; another to cut vegetables; another used by butchers; razor (ustooro)—from Nepaul.  
 Hunting-knife, with buckhorn handle, silver mounted; velvet case, silver mounted—from Vizianagrum.  
 Firungicuttee; Nimacha; Thagah; Hindoostangsigh; Nindoovarah soora cutty; Gooptee; Firungicutty; Prishentzoo; Kygaroo; Kyzaroo; Bakoo; Booranpooree; Patanee; Bondalekhata; Sectarampooree; Jamdadoo; Chelaneh; Kataroo; Pieshcubzoo; Andamaroo—from Vizianagrum.  
 Betel knife (notu kuttaree; tamool kuttarees,) knives used by natives of rank; kampte dooe, for cutting wood; Abro and Naga dooe, weapons—from Assam.

CLASS XXII.—*Iron and General Hardware.*

Metal goglet used by natives of Malabar—from Calicut.  
 Iron pans and iron spoons—from Chota Nagpore.  
 Wire—from Cuttack.  
 Brass peacock lamp—from Agra.  
 Six vessels of brass, made at Patna.  
 Vessels composed of zinc and copper—from Moorshedabad.  
 Brass manufactures, viz.:—Brass plates, cups, vessels, and cooking utensils—from Agra and Mirzapore.  
 Cooking utensils, consisting of copper, brass, and pewter plates, and a variety of cups, vessels, and other domestic articles, from Assam, Calcutta, and Moorshedabad.  
 Miscellaneous collection of articles in metal, used in worshipping, and for domestic use—from Nepaul.  
 Large and small Bidree hookahs, from Rajah of Dholepore.  
 Seven specimens of bell metal—from Kotah.  
 Steels for striking light, and tweezers—from Rajah of Jesselmere.

CLASS XXIII.—*Jewellery, Works in the Precious Metals.*

The Durria-i-Noor, or the Sea of Light diamond, set as an armlet, with ten smaller diamonds surrounding it.  
 Large pearl necklace, consisting of 224 large pearls.  
 Shorter one, of 104 large pearls.  
 Short necklace, of four very large spinelle rubies.  
 Pair of emerald armlets, three large stones in each.  
 Carved emerald and diamond turban ornament.  
 Set diamond and emerald bridle and martingale.  
 Gold-mounted saddle, set with diamonds, emeralds, and rubies.  
 Pearl robe and emerald girdle of a Sikh chief.  
 Glass case, with silver filigree ornaments; head ornaments; bracelets; brooches; umbrella; elephants' hair bracelets; hair pins; neck chain; girdle; flower holders—from Cuttack. These filigree silver ornaments, which are only worn by Europeans, have been manufactured by the native silversmiths of Cuttack. They are remarkable for their extreme lightness, neatness of workmanship, and cheapness.  
 Enamelled lutchkas; Gotah hars or garlands; gold and silver lutchkas; gold and silver gothas—from H. M. the King of Oude.  
 Glass bracelets; beads of silver, hollow; small globes of glass, silvered inside—from Delhi.  
 Buddha necklace; ornaments worn in turbans; gold and silver wire—from Rajah of Jeypore.  
 Silver toys—viz., Deer-fighting, ram-fighting, combat with tiger, wrestlers—from Rajah of Kola.  
 Armlet engraved, iron gilt; gold thread, from Gwalior.  
 Silver golabas or rosewater bottles, embossed in gold, made in Calcutta.  
 Silver filigree, worked uterdun, or uter holder. Cuttack

silver filigree flower-basket. Manufactured by the native silversmiths of Cuttack. The holder, or the uterdun, is filled with cotton dipped into oil of roses and placed on a table, thus diffusing fragrance throughout the room.

Silver goojree; punchum and mulls; pair of silver pyjore; mulls; bottles, for rosewater; silver mulls; uter stand; gold ear-rings, from Calcutta.

Gold and silver thread from Moorshedabad.

Gold and silver filigree work from Dacca.

Chain ornaments for the head; ear-rings; ear ornaments; neck ornaments; pendant; armlets; ring for the thumb, and nose-ring; ornaments for the feet; neck-chains of gold and silver, such as are used by the natives of the North-west Provinces, and manufactured in the city of Delhi.

Bangles of white ivory and red, and of various colours; bangles worked with gold; buffalo horn, brass-mounted clasp; lac gilt and plain bangles; bracelets gilt—from Bengal.

Hookah bottom in silver; cocoa-nut and silver mounted, manufactured in Calcutta.

Silver flower-cases gilt; silver filigree worked spice-box, from Mirzapore, by Baboo Murhut Parsramgeer.

Diamond armlet, necklace, and ear-ring; necklace, with a star and emeralds; string of gold moorkee; gold beads, armlet, and wristlet, &c., from Calcutta, and as worn by the better class of native ladies, and manufactured by the native silversmiths of Calcutta.

Gold necklaces and bracelets, made at Agra.

Silver box, and other articles, from Rajah of Ulwar.

Necklace of pearls, with diamonds and emeralds; diamond ring, bangles set with jewels; necklace of jewels and pearls; necklace of pearls; garland of pearls; armlets; ear-rings; bracelets: uter bottle; goolabdan for rosewater; pandan, spice-stand; plate—from His Highness the Rajah of Dholepore.

Plate of silver embossed; goolabdan partly gilt; silver bottle; drinking mug and cups; small box, partly gilt; pandan with cover; flower-pot of silver wire; 3 dice and 16 gold draftsmen; hookah ornamented with gold; glass case, containing a dourree or necklace of gold, with two pendants; silver horse stirrups—from Rajah of Jodhpore.

A necklace of gold, and pair of bracelets inlaid with painted and gilt glass in imitation of mosaic, from the Rajah of Pertabgurh.

Silver plate with cover, jar and jug; silver bottle and stopper, ewer, cup, and wash-hand basin—from Maha Rajah Goolab Sing of Cushnee.

Ear ornaments—from Lahore.

Jasper cups; crystal cups; agate cups and jugs—from Lahore.

Crystal arm ornaments; pot and cover; jar and cover; jasper boxes, vase, and cup—from Lahore.

Tea-pot; agate bottle; jasper cup; onyx cup; paper weight, crystal; jasper leaf; imitation fish, silver; silver covers—from Lahore.

Pearl necklace, head ornament, bracelets, and diamond ring, from Rajah of Pattiala.

Anklets, silver; bangles, silver; ear ornaments, armlets, ear-rings; head ornament; drinking cup; enamelled silver cup—from Rancee Sookhan of Sheharunpore and from Kangra.

Gold moher and other coins; golden necklace, with silver chain; nose rings; golden ear-rings—from Nepaul.

Sandal-wood box, containing silver necklace and bracelets; rings worn round the ankle; silver armlet of Bhugwattee; Nepaul silver coins of one rupee; of eight annas; four annas; two annas; one anna; half anna; quarter anna; copper coin, double pie; copper coin, single pie; copper half piece; copper coin, quarter piece—from Nepaul.

Dhalee or gold necklace; Isoobangsey necklace; Bayet necklace; Burmese ear knobs worn by men and women; gold rolled ear knobs and bangles; silver betel box and waterstand, with stand; silver spittoon; small basket made of silver wire, from Tenasserim Provinces.

Male and female ear ornaments, from Assam, such as

are worn by the Burmese and manufactured in the Tenasserim provinces.

Golabdan with plates, one pair (Rao of Cutch). These are made in Cutch, and are specimens of what is called the Cutch silver-work in Bombay.

Necklaces and bracelets, from Poona.

Beads, from Guzerat.

Bracelets, agates, &c.; brooches of several kinds of stones; buttons, shanked; buttons, not shanked; necklaces; beads; brooches plain, of agate, bloodstone; buttons and studs, not shanked—from Ahmedabad.

Gourd snuff-boxes, mounted with gold and silver—from Scinde.

Specimens of gilt wire in its different stages, when under preparation for the manufacturing of the Boorhanpore fabrics.

For the description of this process, see the following paragraphs, with which a sketch was furnished by R. N. Hamilton, Esq., resident at Indore, before whom the specimens forwarded were prepared:—

Par. 4.—No. 1 is the silver as it is turned out of the furnace into a mould. The silver put into the crucible was 62 rupees of the ordinary local currency. The crucible No. 1 was formed of clay taken out of the small river "Panderal" which runs into the "Taptée" on the western side of the city of Boorhanpore. The furnace was formed of four common bricks laid on the earthen floor, a layer of charcoal placed at the bottom; on this the crucible, which was covered over entirely with charcoal, fanned by a hand punkha, a square bit of mat of four by nine inches, to increase the heat, and were occasionally thrown into the fire in small quantities; and in forty-seven minutes the silver was in a fluid state ready to pour into a mould, from which the specimen No. 1 was turned out.

5.—No. 2 is a mould of silver beaten out and rounded, after which it is slightly filed, as shown, to allow the gold to adhere; this is simply washed in water, then well rubbed with a fresh-cut lime, and then washed in lime-juice and water; it is then moderately warmed, after which the gold No. 3 is folded over it, after which the bar is put into the fire, warmed, and then beaten with a hammer, and becomes as shown in specimen No. 4.

6.—Specimen No. 3 is the gold: before being put upon the silver bar No. 2, it is well washed with fresh lime-juice and water, and then boiled in this liquor; on being taken out it is warm, and easily folded on the silver bar No. 2.

7.—This is the entire process of plating the gold: after this the specimen No. 4 is placed opposite to one of the holes in the steel plate B (vide drawing), a small end, about three quarters of an inch, being left of the silver, on which the iron nipper (D) is fastened; the bar then is drawn through the plate B, until it assumes the sizes in specimens No. 5, and No. 6 is the last process in the workshop, before it is made over to the manufacturers.

8.—The manufacturers have still further to reduce the wire, which is done in a similar manner, only that instead of a windlass, two reels moving on pivots are substituted; the gold thread being wound off, one then passing through apertures in a steel plate of very small dimensions, and being wound on another reel, both are worked at once by one man, sitting, and by his hand giving velocity to either as may be requisite.

Specimen No. 7 is the gold thread on a reel, after having gone through the above process; it is flattened with a hammer, and becomes specimen No. 8, which is the identical bar (No. 4), after it has gone through every process, and is ready to be united with the silk (specimen Nos. 9 and 10). This is a simple process, a spindle of silk, No. 9, and a spindle of gold, No. 8, are taken by a man, and passed over a hook in a beam about six feet from the ground. Under this the man sits: he first twists the silk spindle by rubbing it along the calf of the leg (on which is a leather gaiter as a guard), and then the gold spindle; when both are in full spin, he regulates the gold by letting it run through the fingers of the left hand whilst keeping up the spinning of each reel, as necessary, with his left, as above described.

10.—Specimen No. 11 is the silk and gold thread as used in the manufacture of brocade and tissues, specimens of which I have already sent to you.

11.—The cost of each specimen is annexed, and the value of the skein of gold thread, ready for use, is one rupee ten annas, and measures 200 yards of Boorhanpore measure.

12.—The cost of the labour of workmen in preparing these specimens was seven rupees, the profits one per cent., and the batta, or exchange from Boorhanpore to Company's rupees, 5 per cent.; the total value or cost of these specimens, including workmen's labour, profit, and batta, was 443 rupees.

Buffalo-horn snuff-box inlaid with metal, from Vellore.

Gold rose chain, from Trichinopoly.

Gold ear-rings, worn by native females, Nair caste; gold necklaces, worn by females of Malabar, Chuckur Mala, Elka Thali, and Valia Moodhurin; gold bangles, worn by males and females of Malabar, Latha Vale, and Boobun Vala; the same, worn by females of Malabar on the ankles; small knife, with pinchbeck and gold handle—from Calicut.

Gold and silver girdles and silver spice-case, from Vizianagram.

Female ornaments (two sets); neck, ear, and nose ornaments; Moodoo bangles; gold and silver inlaid Nair knives; silver ornaments, &c.—from Travancore.

Bangles; kais ring and cockatoo chain; finger rings; seal ring—from Celebes.

Gold ornament worn by Malay women of rank as fastening for waist-belt, from Singapore.

Bundle of brass and pewter jewellery worn by natives of lower order in Bengal.

Model in glass of the great diamond in the possession of the Nizam; description by Henry Piddington, Curator, Museum Economic Geology, Calcutta:—

"About twelve or fourteen years ago a large diamond was found in the Nizam's country under circumstances of rather a curious nature. The model now shown is the model of a part only, a piece having been chipped off, which after passing through many hands, was purchased by a native banker for 70,000 rupees.

"The larger piece, as represented by the model, is in the possession of his highness the Nizam, and at the time of discovery was exhibited to many European gentlemen.

"The manner in which this diamond was originally found, may be considered interesting. It was first seen in the hands of a native child, who was playing with it, of course ignorant of its value. On eight annas being offered for what the poor people considered as a new stone, their suspicion was excited, which led ultimately to the discovery of the bright stone being a real diamond."

"The size of the stone exactly taken by callipers, from the leaden model, is as follows:—

|                             | Inches. |
|-----------------------------|---------|
| Length . . . . .            | 2.48    |
| Greatest breadth . . . . .  | 1.35    |
| Average thickness . . . . . | 0.92    |

"I have had now exact models cut in glass from the leaden one exhibited at the meeting, and I find that

|                                    | Grains.  |
|------------------------------------|----------|
| Their absolute weight is . . . . . | 1,164.50 |
| Their specific gravity . . . . .   | 3.70     |

"Now according to various authorities we have for the specific gravity of the diamond—

|                                         |      |
|-----------------------------------------|------|
| Ure . . . . .                           | 3.53 |
| Brewster, colourless . . . . .          | 3.52 |
| " orange . . . . .                      | 3.55 |
| Jameson, 12 authorities, mean . . . . . | 3.52 |

Mean . . . . . 3.52

"And hence assuming our model to be exact (and it is very nearly so), we have by a simple proportion not quite 1,108 grains for the actual weight of the Nizam's diamond.

"This is equal to 277 carats of weight for the rough

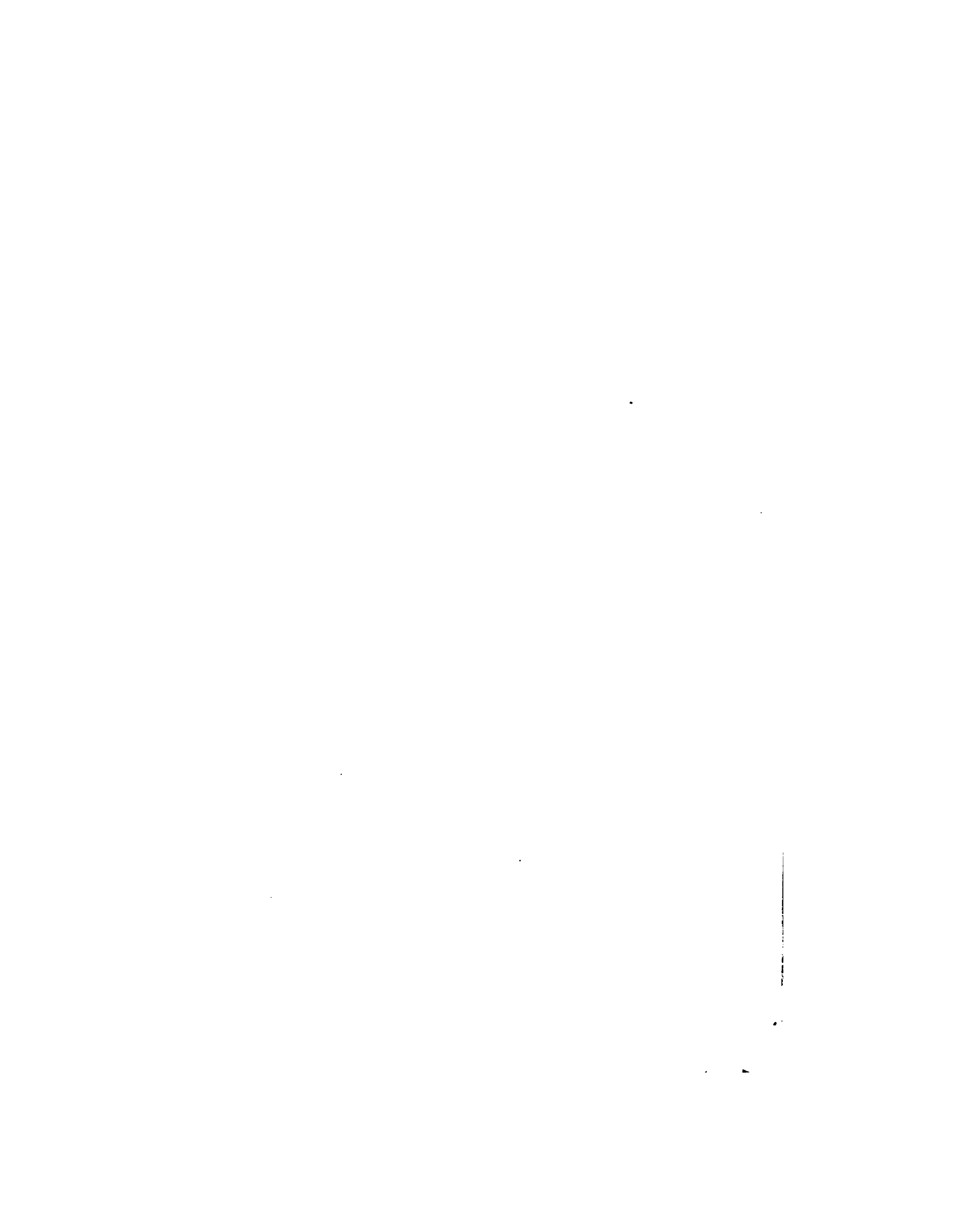
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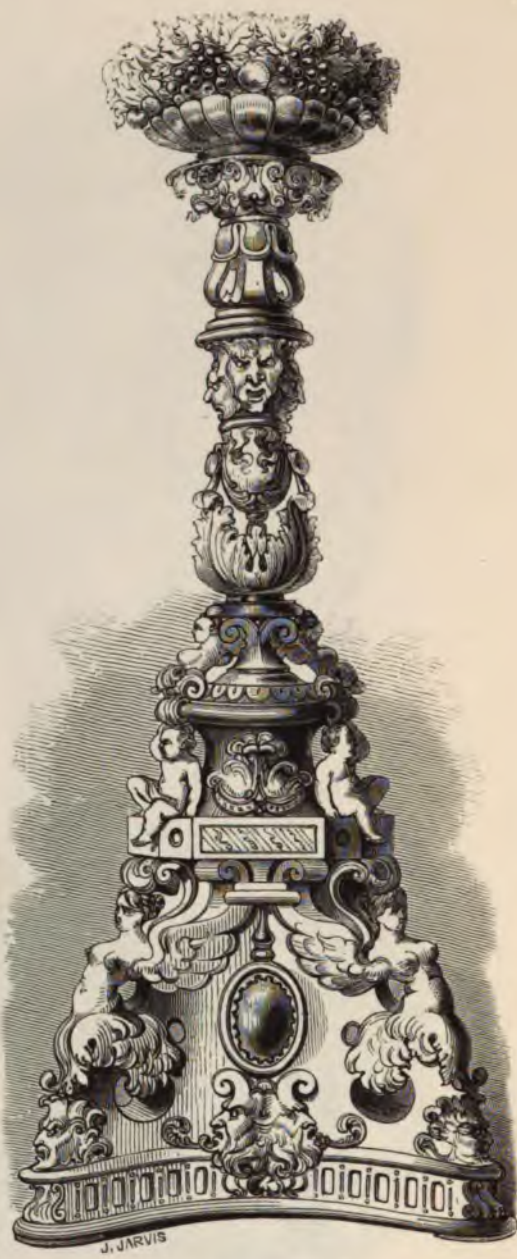




284.

CARVED CHAIR, IN BOMBAY BLACKWOOD. INDIA.

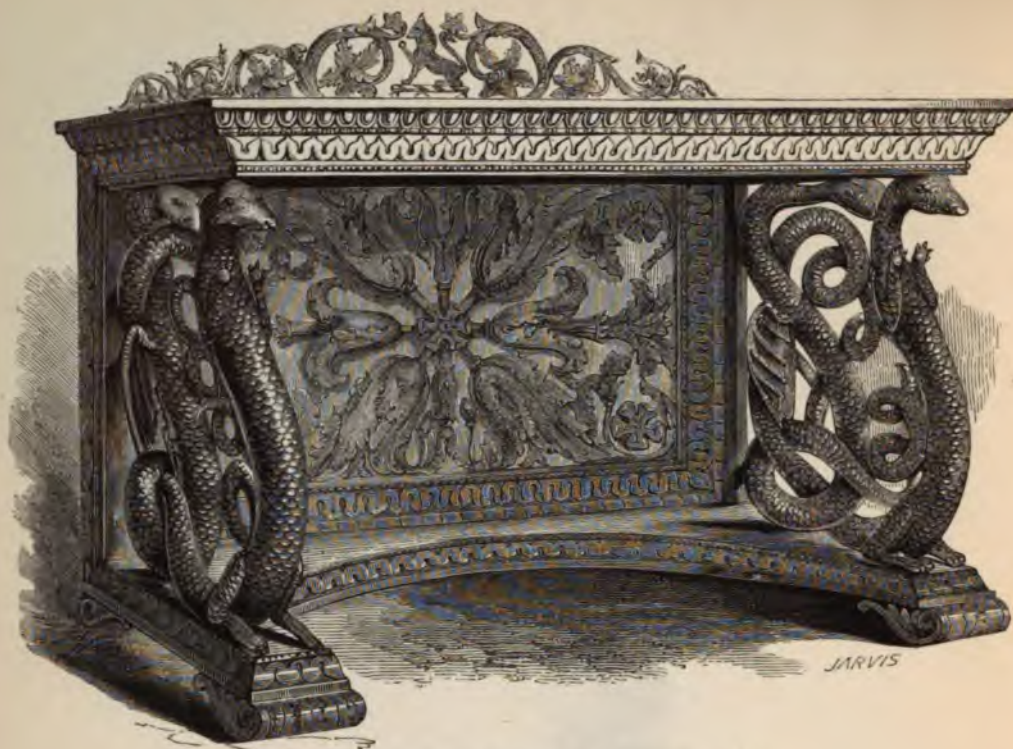




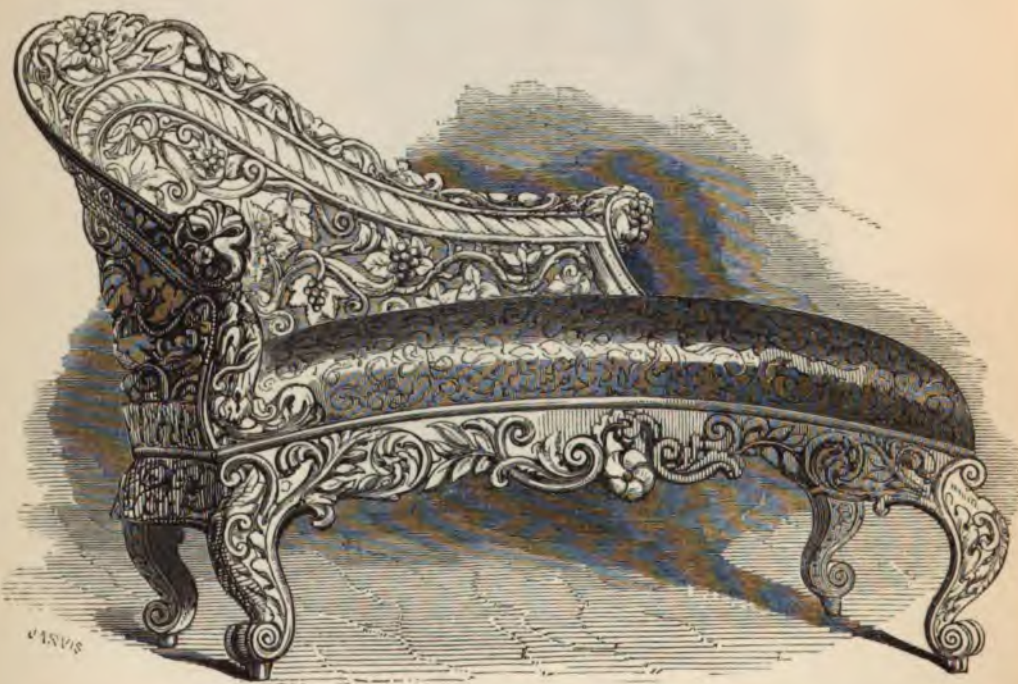
J. JARVIS

287. SPECIMEN OF WOOD CARVING, DESIGNED BY MR. ROGERS. CARVED BY NATIVES AT MADRAS.





SIDEBOARD, OF NATIVE DESIGN AND CARVING. INDIA.



218.

SOFA, OF NATIVE DESIGN AND EXECUTION. INDIA.

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59.

CARVED INDIAN TABLE; EBONY.



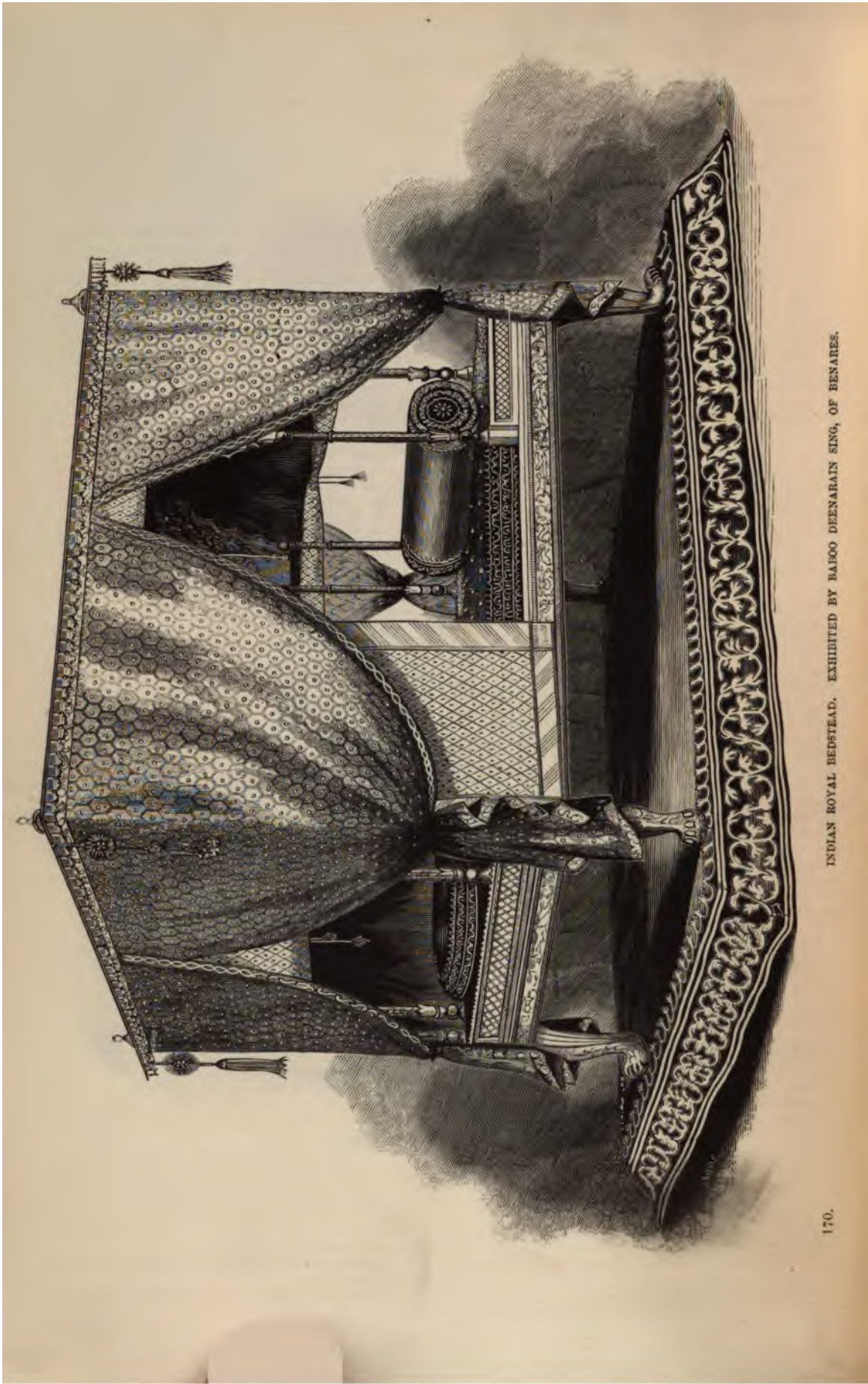




JARVIS.

SPECIMEN OF INDIAN CARVING.





diamond, and as the rough stones are usually taken to give but one-half of their weight when cut and polished, it would allow 136½ carats, or a weight between the Pitt (or Regent) diamond (136½ carats), and that of the Grand Duke of Tuscany (139 carats), for it in its present condition; and if we take it that one-eighth of what it would be when polished was taken off with the splinter sold to the native, as related by Captain Fitzgerald, we shall then have 155½ carats for the possible weight of it, if it had been cut and polished entire; which would then place it as to weight between the Tuscan and the great Russian diamond of 196 carats, which last is well known to be an Indian stone.\*

"We are not informed if this stone is considered as likely to be one of pure water, which can only be ascertained by polishing it, though we know that the natives of India, and particularly of the Deccan, are too good judges of diamonds to mistake a topaz for one, and it is stated that 70,000 rupees have been paid for the fragment. It therefore certainly adds one extraordinary fact more to the history of this most wonderful of the gems."

#### CLASS XXIV.

Glass: plain goblets, mug, glass cup, tumblers, hydraulic toy, large phial, and pickle pot, from Mirzapore in the Benares division.

Glass bangles and glass globes silvered inside. Delhi.

#### CLASS XXV.—*Ceramic Manufactures.*

Jars of glazed pottery, from Jessore.

Assortment of Pegu jars, as used in the H. C.'s Dispensary at Calcutta.

Two large Pegu jars, from Moulmein.

Specimens of glazed pottery, such as used in the H. C.'s Dispensary since 1841, when they were first introduced by the then officiating head of the department, for packing medicines free from acid or corrosive properties.

Drinking cups, with covers; tumblers, with handles; vessels for sprinkling rosewater and distributing pan; cups; hookah, called ever fresh; large hookah, for placing on the ground; specimens of earth from which the above are manufactured.—Manufactured at Amroha, district of Moradabad, in Rohilkund.

Complete assortment of native pottery for domestic purposes, as used in Calcutta.

Bread pot; dessert plate; goblet, red and white, worked; a cup, with top, and saucer; mug; different sorts of hookahs; flower pot; spittoon; rosewater pot; tea pot—from Mirzapore, division Benares.

Ghurrahs, Lookdar, manufactured at Mirzapore.

Specimens of painted pottery, from Kotah.

Specimens of Bhagulpore pottery.

Specimens of Sewan pottery. Patna.

Sorahces, large and small; metredars; hookahs; abgurrahs; gullasses; gahrees; abgurrahs; chillums; surpoces—from Asimgurh.

Pieces of earthenware, from Lahore.

Earthen goblet painted in gold and flowers at Hyderabad. Major Moore.

Improved pottery from Madras, made by natives under the superintendence of Dr. Hunter.

Pottery (Ahmedabad, two boxes). This arrived just in time to be shipped, and was not examined by the Bombay Committee, while the pottery from Ahmednuggar arrived too late to be shipped.

#### CLASS XXVI.—*Furniture and Upholstery.*

Royal bedstead, with silk and velvet covering, and velvet mattresses for the same, from Deo Naryn Sing of Benares.

\* The Koh-i-Noor, uncut, weighed 800 carats, but by cutting was reduced to 279 carats. Its value is perhaps two millions sterling.

Bedstead of silver enamelled, with Cashmere shawl hangings, complete, with pillows, &c., from Maha Rajah Goolab Sing of Cashmere.

Ottooah, or curtains for beds, and door chieks. Bambooreed chairs. Ratan morahs. Large palmyra and other fans. Sittul puttee mats, very fine. (See also Class XXIX.)

Papier-maché inkstand with tray, from Cashmere and Bejnour, near Rohilkund.

A slab of alabaster from Ninereh formed into a table, by J. Pulman, at the India House, exhibited by Lieut.-Col. Sykes.

Ivory chairs, presented by the Rajah of Vizianagram. Blackwood carved couches, whole and half backed, with springs and yellow silk damask; blackwood chiffonnière, bookcases, prie-dieu chairs, with spring cushions and damask silk, large size flower stands, handsome pier tables, and side stands; sandal-wood and ebony-wood work stands, with Bombay inlaid top; work-table; chess-table—from Bombay.

Bombay furniture. The blackwood of which this is made comes from the western part of India; the damask silk from England. Among the pieces will be found two work-stands, the tops of which are of Bombay inlaid work, one with sandal-wood, the other with ebony stands. Blackwood is yielded by *Dalbergia latifolia*.

Octagon and square marble chess-table, inlaid with agates at Agra. The carved ebony stands by Messrs. Sherwood, of Calcutta.

A square marble chess-board painted in imitation of inlaid work. W. H. Tyler, Esq.

Two screens, carved in ebony, by Moargapa Achary, a native carpenter of Madras, without any European assistance.—Exhibited by Mrs. B. Key.

Candelabra and bookcase; work-table and tea-caddy. Exhibited by D. Pugh, Esq., Madras.

Two marble couches and chairs, of Rajpootana marble, with open lattice-worked backs and sides. Presented by Rajah Anund Nath Roy of Nattore.

A flower-stand carved in ebony. Exhibited by the Rev. W. Antrobus, Acton.

#### CLASS XXVII.—*Manufactures in Mineral Substances.*

Numerous cornelian ornaments in agate, &c., from Ahmedabad.

Polished variegated marble specimens, from Ajmere and Assam.

Lattice-work in black and white marble, from Boondee. Two smaller from Ulwar.

Two lattice-work screens, carved in stone, from Mirzapore.

Sculptured figures in Rajpootana marble, from Jeypore.

Plates and cups of Jesselmere brecciated and variegated green marbles, from the Rajah of Jesselmere.

Stone plates and cups, pan, dish, and inkstand, from Monghir.

Stone cups and trays, from Patna.

Numerous specimens of cups, bottles, floating swans, and fish, from the Rajah of Jodhpore.

Marble ornaments and beads, from Boondee.

Stone figures, from Jeypore.

Stone knife handles, from the Rajah of Ulwar.

Cornelian knife handles cut by natives in Calcutta.

Marble inlaid inkstands, card trays, paper weights, and paper knives, from Agra.

Mosaics and inlaid works:—Chessboards, inlaid with agates. Marble painted in imitation of mosaic work. Marble inkstands and paper knives inlaid. Card trays. Paper presses. The inlaid marble work is only done at Agra in the north-western provinces of Bengal.

A chessboard, and marble paper presses, painted in imitation of mosaic work.

Set of agate and cornelian chessmen, exhibited by Lieut.-Colonel Sykes.

Screens carved in stone and Rajpootana marble by natives.

CLASS XXVIII.—*Manufactures from Animal or Vegetable Substances, not being woven, felted, or included in other sections.*

*Manufactures from Gutta Percha.*

Splints, from Singapore:—Gutta percha splints, for setting broken limbs.

Manufactures from caoutchouc. (See Class IV.)

*Manufactures from Ivory, Horn, Shell, Cocoa-nut, and Pith.*

Articles cut out of ivory, from Berhampore:—Set of chessmen, carved from the drawings in Layard's Nineveh; elephants with umbaree, charjama, howdah, guddee, and plain; small elephant with umbaree; elephant's head; Brahminy bull and cow; camel with saddle-cloth; camel, plain; tiger; procession of a native prince; state-barge; carriage called "ekka;" cart; native dance; puzzles of various sorts, and cups and balls; one hundred set of coloured and plain letters; carved box; set of ivory workmen; the Juggodhatree; Juggernaut car; doorgah; kali; group of prisoners; ten single figures:—water-carrier, five beggars, old Brahmin, musician, fisherman, and Mahomedan. A scratcher; ivory box; silk-winders; bullock-cart; walking-stick.

Burmese carved chessmen.

Inkstand; work-boxes; two trays and stands, with scissors, knife, pen, and folder; two pen trays, with knife, scissors, pen, and folder; a whisk; letter-holder; large and small pincushions; egg-cups; ivory mortar; snuff-boxes; fan; looking-glass and case—from Lahore.

Ivory elephant; ivory horses; ivory camelopard; bison-horn lizard; ivory images of Kistna; very small ivory elephant; very minute ivory elephant, from Travancore.

Shell of a pea containing an ivory elephant, from Calicut.

Ivory bracelets. These, which are much worn by the women of Cutch and Gujerat, are made out of ivory brought from Africa.

An ivory walking-stick with gold ring, manufactured in the dominions of H. H. the Maharajah of Jodhpore.

Scratcher and combs of ivory.

Cribbage-board, made of ivory and sandal-wood, manufactured in Calcutta.

Ladies' ivory flowered work-box, an ivory fan, a knife, and chopsticks.—From the Rajah of Nepaul.

An ivory chowrie, manufactured in the dominions of H. H. the Maharajah of Jodhpore.

An ivory chowrie, manufactured in the vicinity of Bhurtpoor.

Combs, carved in ivory, from the district of Bijnour, Rohilcund.

Horn ornaments. These are made at Viziadroog, on the Concan coast of the Bombay Presidency. Horns polished. Cheroot cases and powder boxes. Pedestals for ornaments. Drinking vessel. Dogs. Trays supported by tigers and bulls. Image of Gurrood, a servant of the Hindoo god Vishnu.

Set of ornaments, made of horn, consisting of chain, cross, girdle, bracelet and earrings, manufactured at Monghyr.

Shell bracelets; chank shell entire, cut, and partially cut; half-moon saw for cutting the shells, and complete set of apparatus used by the bracelet-makers of Dacca. Exhibited by Dr. Wise and R. H. Mytton, Esq.

Cocoa-nut shell small elephant.

Small polished cocoa-nut snuff-box; bilva-fruit snuff-box.

Pair of pith figures, Rajah and Ranee of Tanjore, carved out of the pith-like stem of *Æschynomone aspera*, from Trichinopoly.

Hats; bottle-covers; glass-covers; life-preservers—made from the pith-like stem of *Æschynomone aspera*.

Toys of *Hedysarum lagenarium*, now *Æschynomone aspera*. Calcutta.

See models of temples in pith, Class XXX.

A set of ebony ornaments, consisting of a chain, cross,

girdle, bracelet, and earrings. A set ditto lacquered. A set ditto of ebony—made in the district of Monghyr.

Carved cocoa-nut shells, silver mounted, black; and without silver mounting, black and brown, from Travancore.

*Manufactures from Wood, not being Furniture, Basket-work, Mats, &c.*

Woods engraved at School of Arts, Madras.

Cuscus-baskets. These are from Poona, and are made of the root of the *Andropogon muricatum*, and ornamented with tinsel, and the elytra of a species of beetle.

Gourd snuff-boxes. The kind used in Sindh and the countries to the northward: they were prepared and ornamented at Kurrachee.

Flower-holder, pandan, fan, dish-cover, fan for winnowing grain, baskets, lightholder, peacock toy, made of bamboo reed in the division of Moorshedabad.

Baskets of sorts, made of split *Calamus rotang* in Calcutta.

Baskets made at Monghyr.

Basket ornamented with cowries. Sheekas, or ropes for suspending pots, &c.

Mats made from the date and palm trees, Bengal.

Table mats made at Calcutta of *Phrynium dichotomum*.

Sectul pattee and musnud mats, from Midnapore.

Large and small floor mats, from Calcutta.

White and coloured mats, from district of Patna.

Cochin mats of different patterns.

Palghat mats, of different patterns, from South Malabar.

Straw mats and reed mat, Calicut.

Rattan mat, manufactured at Calcutta of *Calamus rotang*.

Bugis mats, Celebes. Rattan mat, Borneo (Banjar (Massin). Mat, Borneo Proper—sent from Singapore.

Mats, from Malay Peninsula (Pulo Aor), Philippine Islands, Pulo Siantan (Anambas Ids), Malacca, made of Bankuang or mat material.

Small articles, Malacca, Bankuang.

Nest of nine baskets, Bawian, ditto.

Covers for provisions, &c., Borneo, Banjar, Massin, made of palm leaf.

Conical hats, from Palembang and Singapore.

Specimen of basket-work, Bawian.

Set of baskets, Singapore.

Bamboo fans, Bawian.

Kopia or Mussulman cap, Malacca basket-work.

A large basket, and several of straw from Calcutta.

White and coloured mats from the district of Patna.

Specimens of plaited straw from ditto.

A large straw basket and 7 smaller, Calcutta.

XXIX.—MISCELLANEOUS MANUFACTURES.

(A.) *Soap, Candles, Ink, &c.*

Bengal native soap.

Marine soap, made of cocoa-nut oil and soda.

Marine soap, made of cocoa-nut oil and soda, from Calicut.

Sealing-wax—red, green, gold-coloured, yellow, and black, from Madras.

Sealing-wax of different colours in sticks, from Guntoor.

Sealing-wax. This is made in the southern Mahratta country at Gokak.

Stearine candles, from Bengal.—Messrs. Sainte of Cosapore.

Full-sized 9-inch and 6-inch camphorated wax candles—from Patna.

Red cotton for ink, and bottle of red ink, from Madras.

Bottles of Bengal ink.

(B.) *Articles for Personal use, as Writing-desks, Work-boxes, &c., in Ivory, Horn, Porcupine-quill, Sandal-wood.*

Ivory and sandal-wood writing-desk and envelope-case; sandal-wood box; small ivory box lined with sandal-

wood; ivory inkstand; buffalo-horn and ivory writing-boxes, lined inside with sandal-wood; buffalo-horn cribbage-board; ivory work-box lined with sandal-wood; porcupine-quill box lined with sandal-wood; ivory watch-stand, with work; cornelian knife-handles; ivory and sandal-wood cribbage-boards; ivory card-cases with book; paper knives; ivory combs; ivory dice. Calcutta.

Box made of cloves. Calcutta.

Ivory backgammon-board, fluted envelope-case, and knitting-box; sandal-wood and ivory box; porcupine-quill-box; white and black elk-horn inkstands; porcupine-quill, ivory, and buffalo-horn work-box; white elk-horn box; buffalo-horn box and tea-chest; sandal-wood and ivory basket—from Vizagapatam.

Porcupine-quill baskets; box made of bison-horn, containing chains made of lac, from Vizagapatam.

Inkstand of buffalo-horn set with porcupine quills, and sandal-wood drawers; watch-stand of buffalo-horn and sandal-wood; hookah snakes with pipe-sticks; hookah pipes.

Porcupine pen-holders, from Vizianagrum.

Inkstand of carved ebony; combs of carved ivory—from Bijour, in Rohilkund.

Sandal-wood box, from Mangalore.

Backgammon-board chessmen, manufactured at Surat.

Carved box (Cutch). This is a specimen of Cutch carving. The wood is from Africa.

Bombay inlaid work. The ivory of which this is principally made is brought from Africa.

Portfolio, netting-box, basket, needle-case, envelope-case, pen-stand, paper-stand, large box, and inkstand.

Round box, turned. This is not lacquered, but polished; it is made of kao-wood.

Wooden boxes turned, and lacquered with various colours, chiefly at Hyderabad, in Sindh.

Wooden combs, from Sindh. These are made of kao wood, a species of olive from Beloochistan.

Sandal-wood box carved, sandal-wood box plain—made at Calcutta.

Inkstand, made of carved ebony, manufactured at Bijour in the Division of Rohilkund.

A lacquered box, made at Bareilly in Rohilkund.

Sandal-wood box, and box made of Sissoo-wood—made at Nepal, and contributed by the Rajah of Nepal.

An assortment of Burmah boxes, from the Tenasserim Provinces.

Shan lacquered boxes—Mr. W. Norris.

Siri boxes, Sumatra Palembang—previous to undergoing the process of lacquering, lacquered plain, and flowered and completed.

Siri boxes, of Kayu Buka—previous to being lacquered, and lacquered and completed.

Writing box, Sumatra Palembang.

Pyramidal boxes, and small lacquered boxes, Sumatra Palembang.

Lacquered water dippers, Sumatra Palembang.

Salver or tray, Singapore, formed in the jungle by Malay woodmen, who bring them into town for sale as soon as a sufficient number is collected. Cost 5*d.* each.

Salver or sweetmeat trays, Sumatra Palembang—as cut from the forest-tree previous to being smoothed and lacquered, partly lacquered, and completed.

Covers for dishes, Borneo (interior of Banjarmasin, S. C.) The ornamental work closely resembles that of the natives of Ceram, but the shell-work is not so fine.

Set of boxes, fitting one within the other, Borneo (Kota Ringin or Waringin, S. C.)

Lid of a box, made at Ceram, in the Malacca islands. This manufacture has recently excited a certain degree of interest, from the close resemblance it bears to the ornamental works of the North American Indians.

Set of Ceram boxes.

Cigar-case, from the Celebes, manufactured from Pandanus leaf by natives of the interior.

Kopia, or skull-cap, from the Celebes. Pandan leaf, worn by the Mussulman inhabitants.

Chess-board, from Pinang, inlaid with specimens of ornamental woods.

Bugis Kapok, from Celebes.

Clove model, Amboyna. Model of an orang basi, or state barge, made of cloves by natives of Amboyna. Flower-basket, made of cloves by natives of Amboyna. Imitation tea service, made of cloves by natives of Amboyna, presented by Robert Bain, Esq.

#### (C.) Imitation Fruits and Flowers.

Artificial fruits and vegetables. These were manufactured at Gokak, in the Belgaum Collectorate, southern Mahratta country: they are only made to order, and do not form an article of export.

1. Custard apples (*Annona squamosa*). 2. Pompalmose (*Citrus decumana*). 3. Jack fruits (*Artocarpus*). 4. Pine apples (*Bromelia ananas*). 5. Pomegranates (*Punica granatum*). 6. Ramphuls or custard apples (large). 7. Citrons (*Citrus medica*). 8. Figs (*Ficus carica*). 9. Mangoes (*Mangifera indica*). 10. Plantains (*Musa sapientum*). 11. Oranges (*Citrus aurantium*). 12. Limes (*Citrus limetta*). 13. Guavas (*Psidium pyriferum*). 14. Jambool (*Eugenia jambolana*). 15. Wood apples (*Feronia elephantum*). 16. Water melons (*Cucumis citrullus*). 17. Sugar-cane sticks (*Saccharum officinarum*). 18. Bere berries (*Zizyphus jujuba*). 19. Tamarinds (*Tamarindus*). 20. Pumpkins (*Cucurbita*). 21. Snake-gourds (*Cucumis sp.*). 22. Tooraees (*Cucumis sp.*). 23. Seogapedas. 24. Kuraslas. 25. Bhendees (*Hibiscus longifolius*). 26. Cucumbers (*Cucumis*). 27. Brinjals (*Solanum melongena*). 28. Onions with leaves (*Allium cepa*). 29. Sweet potatoes (*Batalas edulis*). 30. Chillies, foreign (*Capsicum*). 31. Chillies, country.

Imitation fruits and flowers.—Lotus flowers, water-lilies, white and pink; parakai; pcechengai; ripe and green chillies; padralengai; cadju fruits; panechakai; bilimbee; brinjals, round and long; betel-nuts, ripe; pomegranate fruits; rose-apples; codumbooly fruits; country gooseberries; chollum bunches; bandicays; Jack-fruit in miniature; pine-apple; mangoes; green and ripe plantain; Guava fruit; Guava green—from Travancore.

Lotus flower, made of sandal-wood, from Calicut.

Imitation fruits.—Walnuts, and pieces of the kernel; almonds and kernels; dates, pistachios; betel-nuts in their prepared state—from Nawab of Rampore, in Rohilkund.

#### (D.) Toys, Beads, Puzzles.

Specimens of toys in ivory, contributed by the Rajah of Jodhpore.

Toys in common use in Bengal.

Merry-go-round, from Bengal.

Toys in wood (Surat); but when they reached the committee, were found to be of so inferior a kind that they were re-sold.

Malay puzzles. Two Malay puzzles in bottles.

Strings of Brahmins' beads, made of the seeds of *Eleocarpus ganitrus*, from Bengal.

Necklaces and bracelets. These are made at Poona, and stated to be composed of the dust of sandal-wood mixed with gum.

Beads (Gujerath). See Class 1.

#### Games.

Boxes of gungalah or packs of cards.

Chowpan board, contributed by the Rajah of Jodhpore.

#### Lac Ware.

Lac ware.—Goblet, varnished; large and small pots; a kind of mug. Wood ware.—Bottle pot; large and small cups; small water-pot; pot for vermilion; plates and toys—from Mirzapore.

Lacquered toys, and lac ornaments.

Specimens of sand with which lac grindstones are made; corundum stones, which, being pulverized, are used in making lac grindstones; lac grindstone complete—from Coimbatore.

Ornaments from dried fruits of cocoa-nut, meant to represent the garlands given to visitors of distinction on visits to the palace, worn by ladies at a particular festival—from Tanjore.

Doyleys made by the ladies of the feudal Mahratta family of Angria, reduced to dependence on their industry by political changes, and chiefly through the suppression of piracy on the western coast of India.—J. Chapman, Esq.

(G.) *Fans, Umbrellas, Parasols, Chowrees, and Walking-sticks.*

Fan with gold handle, khus khus-ka punkah, made of khus-khus grass (*Andropogon muricatum*), which, when wetted, emits a fine fragrance.—Contributed by H. H. the Rajah of Kota.

Sandal-wood fans.

Large and hand-fans of Palmyra leaf.—Bengal.

A fan from the Rajah of Pattials.

A large and two small fans with plated handle, from Calcutta.

Fans from the states of the Rajah of Jodhpore.

A state fan, with silver handle, from Moorshedabad.

Fan of China beads and pearls.—Delhi.

State umbrella, with silver stick, from Moorshedabad. (See accompanying Plate.)

An ornamented and gold embroidered state parasol with silver stick—from Moorshedabad.

Assortment of Bengalee chattahs, used by natives during rainy season.

Soorooj mookee, a native parasol, with silver top and handle. Gold umbrella, with silver top and handle.—Contributed by the Rajah of Dholepore.

Assamese umbrellas, used by nobility; cane fans; cane mat, for noblemen to sit on; peacock-feather fans, used by natives of rank; luggage baskets, used for carrying cloths.—Assam.

An umbrella made of painted cloth. A small umbrella.—Manufactured at Calcutta.

Four bamboo walking-sticks, gold and silver mounted, contributed by the Rajah of Ulwar.

A painted stick with silver top, contributed by the Rajah of Kissenghur.

Walking-sticks of sorts, made at Calcutta and Cochinchina.

Betel-nut sticks.

Sandal-wood whisk, from Calicut.

Sandal-wood and ivory chowrees, or whisks, from the Rajah of Bhurtpore.

Two chowrees, of the tail of the Yak (*Bos grunniens*), with silver handles—from the Rajah of Ulwar.

*Hookahs and Hookah Snakes.*

Cocoa-nut and lac hookahs—from Bengal

Hookah snake with nicha; snake-cover for the hookah, with a rosette to fasten to the mouth-piece; hookah snakes, with pipe-sticks; hookah pipe, stick, &c.

Selim for smoking, sent from Singapore.

Singpoo pipe for smoking opium; box of pipes.

*Boots and Shoes, &c.*

Shoes worked with gold and silver.

Gold-worked shoes and slippers, for females; silver-worked slippers; gold-worked shoes, for men and children; Bengalee shoes with gold and silver; Bengalee country leather; Bengalee writing red leather; Bengalee yellow; buffalo-horn combs.

Scindean boots and shoes, from H. H. Meer Ali Morad of Khyrpoor.

Looking-glass and case, from the Rancee Sookhan of Scharunpore.

(II.) *Fishing Tackle of all kinds.*

Nets—Sekaolies—made at Calcutta.

Floating net, Singapore, employed in taking a small kind of herring in the neighbouring strait. The twine is of cotton, manufactured in Java.

Floating net. The twine of this net is made from the rami fibre, *Urtica nivea*. (See Class IV.)

Casting net. The thread made in Java from native cotton.

Seine net. Twine of rami fibre.

Fishing lines. Twine of rami fibre.

Fishing lines. Twine made of Java cotton thread, tanned with the fruit of the mangrove.

*Description of Fishing in Bombay Harbour and its Vicinity.*

Model of stake-net fishing, with fishing-nets used in Bombay.

1 If new stakes are to be sunk, a space of 2 fathoms must be reserved for the passage of boats on each side of the compartment. Fishing in stakes is always within 10 fathoms of water; stakes are made of heddy wood in three or four pieces. If a cocoa-nut tree, one answers the purpose. In some cases a piece is added to it, if the tree is a short one. A stake is sunk about 3 fathoms in mud; it is generally 15 fathoms long, 3 of which are buried in the mud, 10 in water, and about 2 over the surface. On the occasion of sinking a stake, two boats are put together and anchored fore and aft, with anchors of about 2 cwt. each, leaving a space of about a quarter fathom between the two, and two cross beams are tied over the boats, in order that they may remain firm and close together, and hold the stake between the reserved space, the lower end of which (the stake) is let down, tied up with large and heavy stones, or anchors of a large size. In order to sink it below they tie four ropes at the top of the stake, each of about 2 or 2½ inches; these ropes are fastened to the masts of the boats with blocks, and some of the people in the boats (who are generally between 30 and 40) pull the stake down by standing over the fore parts of the boats, and let it into the water in a straight line with the others, through the space allotted for that purpose, when it is sunk in the manner above represented. This operation is performed when there is full tide; and as the stake is held between the two boats, tied up with the ropes above alluded to, it is driven down by the force of the boats, which sink also as much as the water; so soon as the ropes become slack they are made fast over and over.

2 The bark of the tree (Babal bark), used in giving colour to the net, accompanies this bearing, and even number (No. 2). A new net, prior to being used, must be boiled in water in copper pots, with clunam or lime, for two days and two nights, and then it may be used for three days, when it should be washed and coloured. All the nets, it may be understood, are made of twine, with the exception of the Wavree net, which is made of thread.

3 Each net, called dole net, is 22 fathoms long, 15 broad, and is made of the shape of a bag, but wide at the mouth (15 fathoms), and narrow at the end (about 2 fathoms), meshes 8 inches wide at the mouth, and reduced in proportion, so as to be half an inch wide at the end. On throwing it into the sea, the mouth on both sides is fastened to the stakes at the distance of 10 fathoms each, which is the space reserved between the stakes. Each side is fastened to a ring put on the stake, the upper edge is held up, and the lower no sooner is tied to the ring than it goes down as far as 8 fathoms, by the weight of a stone which is kept always tied up to the girth. A line across is also tied up between the two stakes, to which the upper edge of the net is tied just in the middle, in order that it may not remain loose and obstruct the entry of the fish. It may be stated that before throwing the net into the sea, its floating end is tied up and secured fast to prevent the escape of the fish. Each boat carries four or five nets, and sometimes three, but not more than five under any circumstances. On the occasion of fishing, when there is full tide, the mouth of the net is kept on the side of the harbour, in order that, on the tide receding, the fish going out may enter the net, and through the strength of the current run down to the end of the net, where all the fish join together; and *vice versa* is the case on the occasion of the ingress of the water. On pulling the net, they draw the lower end up, and after taking it on board they open the end and draw the fish



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ORNAMENTAL STATE UMBRELLA. INDIA.





out. The fishing operation by the stakes commences by the 10th of the moon, and lasts until the 20th, when again by the 26th it recommences, which lasts until the 5th of the moon, thus the operation is carried on twice in a month; each day after fishing, the net is brought home, washed or dipped once or twice in salt water, and exposed to air for a little while, and taken back again for fishing. During the neap-tides, when the operation ceases, the nets are brought home, washed thoroughly in sweet water, coloured if necessary, and dried in the sun. Unless this be done, the fish would not fall in, but keep afar off, from the nets having become offensive. The meshes are wide at the mouth, and narrow at the end. The fish generally caught are mostly bomloes and prawns, large and small coorvins, pomphlets, soles, shrimps, and many other sorts of small fish, sold in Bombay Bazaar. Each stake made of wood costs 40 rupees, and if cocoa-nut tree 15 rupees; the former is durable, and can last about eight years, and the latter three or four years only. Each dole-net costs 40 rupees.

4 The stakes are generally removed from the sea in the month of May, and fixed again in the month of October, because they are subject to being broken during the south-west monsoon; but those that are fixed in the river, or inner harbour, are allowed to remain throughout the year. No implements or instruments are used, such as weapons, &c., for killing and taking the fish out of the net. They are generally taken out by bamboo baskets, large and small, such as are required and suited to the purpose, the cost of which varies from one to two annas each.

5 If in case a large fish, such as a shark or seal fish, enter a net, they devour small fish, and tear off and destroy the net. In this case it cannot be mended by others but those that are well versed in its making. If in mending a mesh is made larger or smaller than the usual proportion, it gives way soon again in the same place from straining. Thus the information relative to fishing by stakes is complete, so far as the mode generally observed by the fishermen of Worlee, Mahim, Dharawee, and Scion; but the fishermen of Bombay, who fish in 12 fathoms water, have their stakes 19 fathoms long; they are sunk in proportion to about 3 feet in mud, 12 in water, and 4 above the surface. Their net is 25 fathoms long, wide at the mouth 20 fathoms, on each side 10 fathoms, and applied in the space of 14 fathoms, which is the width or space reserved between the two stakes. Each stake is made of four pieces of wood, cost about 60 rupees, and the cost of the net is 80 rupees. Each boat carries two nets only; meshes at the mouth 12 inches wide, and at the end half an inch.

6 In dole fishing at Bombay and Sewree they generally take two nets in a boat, a nakhwa, or the owner, provides a boat with sails, oars, ropes, &c., complete, as also the stakes, together with nets, and all other implements required for the purpose of fishing; in fact, he bears all the expenses connected with it, and in return takes two-thirds of the fish obtained, the rest goes to the crew; but if coorvin, which is a large and valuable fish, all such fish goes to his share, in which the crews are not allowed to participate. If any small fish, it is divided in three, two parts of it are taken by the owner, and one by the crew.

7 Dole fishing of Worlee, Mahim, Dharawee, and Scion differs somewhat from the above in respect to distribution. They take generally four or five nets in a boat: an owner of a boat and net takes four shares, if of a net only takes two shares, and each Lascar or crew one share; all and every sort of fish obtained, whether large or small, is included in this distribution, and no exception made as in the case of Bombay dole.

8 A paul net is 60 fathoms long and 2 broad. The fish caught in this is of several kinds—bing, pomphlets, white, sea-sharks, and several other small sorts of fish, with the exception of bomloes and prawns. Each boat contains ten or twelve men carrying nets at the rate of three per head; meshes 5 inches. Each net costs six rupees. This excursion is carried on from the 20th to

the 8th of the moon, from September to March, between 15 and 25 fathoms of water outside the harbour.

9 A *pass net* is 40 fathoms long and 2 broad. Each boat contains ten or twelve men, and take nets at the rate of three per head. Meshes 6 inches each. Net costs 58 rupees. The fish obtained is mostly black pomphlets, sharks, and a few white pomphlets. The mode of throwing nets is the same as that of *wagra*, described in the 10th paragraph. This fishing is carried on from the 20th to the 8th of the moon, during five months, from April to August, in 15 or 20 fathoms of water out of harbour.

10 Nets for deep-water fishing, say between 6 and 8 fathoms, are called *wagra*, each 30 fathoms in length and 2 in breadth. It is let go straight down below in the water, tied up with a buoy-rope. The fish obtained in this excursion is large [*shir fish*], salmon-fish, coorvin, &c. The price of this net is six rupees; the size of mesh is 7 inches. They pull the net into the boat, and draw the fish out. This fishing is only during the full tide. Each boat takes six or seven men, and the nets are taken at the rate of three per head. Each net has a stick interwoven in it at the distance of 1½ fathoms, and at the end a stone is tied, in order to sink it below. On the occasion of throwing the nets into the sea they unsail the boat, and tie each net with the other, and throw them down altogether, by fastening one end to the boat. This fishing is carried on generally throughout the year, and obtains generally no other fish but *dadah*, and sometimes salmon-fish.—(*Shir Mahi*.)

11 A *rauvas*, or salmon-net, is 20 fathoms long and 1½ broad. One boat, containing six men, takes from 20 to 25 nets, and sails about the harbour in the river during moonlight nights, and the fish obtained is generally salmon-fish, and seldom pomphlets. Meshes 4 inches; and the cost of the net is four rupees. Large canoes also proceed on this excursion within the river. During dark nights this operation is unproductive, as the fish is not then obtainable, and therefore they proceed only in moonlight nights. It is carried on from November to March.

12 A *peia* net is 40 fathoms long and 1½ broad, thrown in ½ fathoms of water, and held by three men at each end. This excursion is daily and constantly in progress at the commencement of tide and ebb tide; and the fish obtained is of small kind, generally mullets, prawns, needle-fish, and haddy-fish. Meshes ½ inch; the cost is 50 rupees. This excursion is carried on throughout the year.

13 A *weddy* net is 5 fathoms long and 2½ broad. Two men are employed fishing, one at each end, and one attends them with a basket, or shoulder, to pick up fish and put them into the basket. The cost of each net is seven rupees; meshes ½ of inch. This excursion is made at any time of the day or night. The fish caught in this, as in the preceding one, called *peia* net, and the excursion is carried on throughout the year.

14 A *waua* fishing. In this excursion *peia* nets are used, as many as required to be laid on the space of ground wished to occupy for the purpose on shore, say about 100 fathoms in length. They proceed on this excursion when the water is low, and the spot nearly dry, when they lay down one end of the net over the ground in a circuitous manner, and fix sticks about 2 fathoms long over it, at a certain distance from each other, and apply mud to that part spread on the ground, to prevent its floating up and set the upper part loose. On the tide being full they go to the spot in a canoe, lift up the other part set loose, and fasten it to the sticks, with which they make a circuitous wall of the net all round on three sides in the water (the fourth a back), say about 1½ fathoms in height, to prevent the return or escape of the fish which has gone towards shore on the ebb tide setting in, and thus the fish that have run down are secured in the space surrounded; and on the water being low, they catch the fish by hand, and put them into the baskets they carry about. In this excursion much fish is caught of different descriptions, and particularly when there is mud mullet; but it can be effected only during spring-tides

twice in each month, say about four days during each spring. Cray-fish, prawns large and small, claps, needle-fish, haddy-fish, &c., are obtained.

15 A wavree net is 10 fathoms long and 1 broad. The fish caught in this are small mullet and haddy-fish within the harbour; meshes 1 inch. They proceed in a canoe made of a single timber, which takes three men and eight or ten nets. The cost is five rupees per net. This fishing is carried on in the months of November, December, January, and February, during moon-light, on the spring-tide, in three or four fathoms of water.

16 A paug net (carp-net) is of the shape of a bugle, 1½ fathoms long, and 3 feet in circumference at the mouth, and narrow at the end, where it is completely closed. At its mouth small pieces of lead plate are interwoven at the distance of 2 inches, in order to make it weighty, so as to go deep. It is thrown in a peculiar way: a man holds it on his elbow, and throws it (by spreading its mouth) into the water, tying the end with a thin rope to the wrist of his left hand. The fish obtained is wekhroo, shimgalah, khuffora, mullet, craid-fish, &c.; but the quantity obtained is always small. Meshes 1 inch; the cost of each net is five rupees. This excursion is in about ½ fathoms, at any time of the day or night, and continued throughout the year.

17 Hook-fishing is within 3 fathoms, either in the river or in open sea. It is made by a line about 50 fathoms long. A hook, tied to a piece of twine about a foot long, is fastened to the line at the distance of a fathom, and thus one line contains 50 hooks; a prawn, or any other small fish, is applied to each hook. Two or three men proceed in a canoe: to one end of the line a large piece of wood is tied to keep the line floating, which they throw in the water, and fasten the other end to the boat. The fish obtained are generally large, and of the description called shimgalah, wave, wekhroo, samb, skate, and shark. The cost of the line, with hooks, &c., complete, is three rupees. This fishing is called "khauda."

18 Dorlee, or hook-fishing, is also in 3 fathoms water, either in river or sea, by a line about 25 fathoms long, with hooks tied at the distance of about ½ fathom each, at the end of the line. Thus one line does not contain more than three or four hooks: a prawn, or any other small fish, is applied to each hook, and the rest of the line is reserved for holding on, and setting loose in the sea as much as the fish may struggle and run along with it. This line has a ball of lead at one end, by the weight of which it goes immediately to the bottom. One man goes in a canoe on this excursion, and the fish obtained is shimgalah, wekhroo, dhomee, samb, and seldom small salmon-fish. The cost of the line, with hooks, &c., complete, is 8 annas.

19 The mode of fishing in the adjacent salt-water inlets, such as Penn River, Nagotua, Pauwell, Ooruu, Carauja, &c., is mostly by "waua," the description of which is given in paragraph 14.

20 There are no pots made for keeping the fish; but the fish are generally put and kept in baskets made of bamboo; each basket carries a weight of about 1½ maund, and if a larger basket, 3 maunds. The fish is conveyed generally on the head, by women belonging to the fishermen. A man carries fish, if larger quantity, in two baskets on a sling. The baskets used are both large and small, according to the size and quantity of fish they may have to convey.

21 In daldee fishing, they make use of paul, pass, wagra, and rauvass nets. Those of Mahim and Worley have a particular way of distributing proceeds amongst their crews. Each man takes three nets, and all such nets as are taken in a boat are tied together with each other and thrown into the sea. Any fish obtained in such three nets belonging to one man is taken by him alone: his comrades are not allowed to share in it. Every man has his special marks to his nets, by which they are distinguished and recognised. In fact, the owner of such net as may catch fish will be benefited alone, and no others. The owner of the boat is remunerated with fish, at the rate of 4 to a cargo of 21.

22 With the daldee fishing of Bombay harbour the case is the reverse of the above. They distribute the prize equally amongst them all, without any exception whatever, whether the nets of all be productive or not; and the owner of the boat is remunerated with fish, at the rate of 5 to a cargo of 21.

23 Bomloes are dried at several places in the vicinity of Bombay, and cured with salt. The quantity of fish is estimated to be annually as follows:—

|                                         |          |
|-----------------------------------------|----------|
| At Worlee, about . . . . .              | 20 lacs. |
| At Mahim, Dharawee, and Scion . . . . . | 20 "     |

#### CLASS XXX.

##### FINE ARTS, AS FAR AS THEY COME WITHIN THE LIMITS OF THE EXHIBITION.

###### (A.) *Sculpture and Models of Figures.*

Clay figures, manufactured in Kishnaghur, and representing the various castes and professions of the Hindoos, viz.:—Sheristadar or head native officer of a court of justice; sirdar-bearer or valet; chaprassee or messenger; bhistee or water-carrier; brojobassee or armed watchman; sircar or account-keeper; dak-runner or man who carries the Government mail; abdar or man who cools the water; cart with bullocks; natives of Bengal making sugar; khamar or Bengal blacksmith; bhiri-wallah or native shepherd; sawyers; prisoner; khansamah or butler; kitnutgar or table-servant; mahter or sweeper; ayah or maid-servant; woman of Bengal carrying water; Bengal fisherman; Chinaman resident in Calcutta; hookah burdar; women cleaning rice; Bengal shopkeeper weighing rice; Bengal musician playing on the trumpet; Bengal weaver preparing the thread; Bengal milkman; sweetmeat baker; Bengal conveyance for women; wood-hoo bahoo or a Hindoo religious mendicant; Bengal musician; massaljee or link-bearer; baberchee or cook; durzee or tailor; syce or groom; dhai or nurse; dhobie or washerman; shopuriah or snake-charmer; woman of Bengal spinning; woman of Bengal cleaning cotton; old Brahmin at his devotions; pundit or learned Hindoo; Bengal netmaker; Indian barber; mallec or gardener; husbandman; soonar or goldsmith; ploughing; harrowing; women grinding rice; chumar or shoemaker; musician playing on the fiddle; Bengal potter; chowkeedar or village watchman; Bengal musicians playing on the drum and cymbals; Bengal singer; Bengal woman carrying a child; Bengal baker; mistree or carpenter; man preparing cotton; coolee or Bengal porter; dawkbanghy-burdar or man who carries the post-office parcels; fukcer or Mussulman religious mendicant; old Brahmin.

Models of natives of different castes. These are manufactured at Gokak, in the Belgaum Collectorate, and Southern Mahratta country. They are only made to order, and do not form an article of export.

Lohar or blacksmith; pooranee; Hindoo pattawallah; weaver; dhobie or washerman; well and people washing; buffalo; Bengal bheestee or water-carrier; mohar; Mussulman woman; carpenter; bheestee and bullock; cotton printer; cheeta or hunting leopard and cart; palanquin with bearers; potter; sepoy; shetsundee; byragee Wychnew; byragee shir; woman grinding; byragee with dog; Brahmin sirdar; Mahratta sirdar; coombe and bullock; suwar or horseman; elephant; potter with wheel; tailor or durzee; carcom; sepoy mahratttee; Bralunin; Brahmin wife and child; Mussulman sepoy; nurse with child; banian; jungum; Moosulman; brinjaree.

Model of a Jamma Bundi. Collector making the annual jambundi, Dharwar. Every caste in the Dukkun, together with tents, trees, &c. This was made in plaster at Poona, and is presented for exhibition by Mr. Mansfield of the Civil Service.

The following is a description of it:—

"It represents the encampment of a collector whilst moving about on the annual tour through his district. His camp is pitched in a Maugee tope or grove, at a short

distance from a small village. A section of the wall or fort surrounding the village is exhibited, in the inside of which are rows of houses with shops, displaying for sale grain, and all kinds of petty merchandise. A river flows by the outside of the fort, and on the banks of it is portrayed that busy scene which is so peculiar to Indian life—men and women washing cloths, laying them out to dry, filling their pitchers with water, making their ablutions, &c. A bridge is thrown across the river, leading direct to the door of the fort. In another part are fields of standing corn, a crop of jowary, and of sugar-cane; adjoining them is a thrashing place, where the oxen are treading out the corn, and the cultivators in a contiguous spot winnowing and preparing it for market; another field is being ploughed and prepared for sowing. Next is a well with bullocks drawing water for irrigation with the leathern bucket or mot'h.

"The collector himself is seated inside the double-poled tent, and is supposed to be engaged in making the Jumma bundy, or settlement for the current year's revenue. He is surrounded by the manletdar and the other revenue officers of the district, with a number of Carpoons seated around. A large body of ryots is collected at the door of the tent, petitioning for "soot," or remission of part of their revenue payments. Groups of them are seated here and there round the adjoining trees, where they are having their petitions written out by the coolkurnees or village accountants. Besides the double-poled tent, there is a beehoba, or sleeping tent, and an office rowtee, and in the rear are a large lot of rowtees and palls for the use of the butler, cook, and other servants. The horses are picketed at a short distance off, and near them are the camels and bullock carts engaged for the transport of the tents and baggage. There are numerous other scenes descriptive of a camp life on this bustling, important occasion; but it would occupy too much space to describe them. There are altogether about 300 figures of all kinds. The tents are made of wood, with a white cloth covering pasted over them. The temples, houses, and section of the village are also cut out of wood and coloured; but all the animals and figures are of the Poonah plaster-work. The whole is exhibited on a large wooden platform nine feet square. A list of all the figures, with the numbers on them, denoting their position on the platform, has been enclosed in one of the boxes. This will serve as a sort of key for arranging the whole."

Thirty-five figures in wood from the Rajah of Jodhpore. Figures of the principal sects, male and female, at Cochin and Travancore, exhibited by T. E. J. Boileau, Esq. Model of European court of justice in the provinces, made by a native modeller, Jessore.

Model of a native court of justice in India.  
Model of a silk factory, by Mr. Cockburn, of Moorsheadabad.

Model of an indigo factory.  
Messrs. Watson's model of a native oil mill.  
Model of a farm establishment. Java, *vid* Singapore.  
Model of a Burmese house of the higher class.  
Model of a Burmese pagoda, gilt, with images and ornaments.

Model of a priest's house in Burma.  
Images of Burmese man and woman.  
Image of Godomah on his earthly throne, as king of kings.

Image of Godomah fasting for four years protected by an enormous serpent.

Image of Godomah's last appearance on earth.  
Image of Amnondal, brother to Godomah.  
Model of the Churuk Pooja, a religious penance practised in Bengal.

Stone sewala or Hindoo temple, from Mirzapore.  
Stone model of Hindoo temple, presented by Baboo Futty Naryn Sing of Benares.

Model of unfinished roygoporom or entrance to the pagoda at Streerungum; model of Nagasoorum pagoda at Combaconum, from Trichinopoly.

Model in pith of *Nuttu* or *sholah* plant (*Eschynomene aspera*), by Lieut-Colonel Burney.

Two smaller figures: Mr. Gandy.

Painted wooden tray (Khyrpoor). This was sent down among the collection of articles forwarded for the Great Exhibition by H. H. Meer Ali Morad, and has therefore been transmitted. It bears a good representation of the manner in which the ceilings of the best houses in Sindhi are ornamented.

Stone intaglios:—Gunesch, Burmah, Bishen Daboe, Muchk, Kuchk, Barah, Nursing, Bawon, Pursooram, Ram Chunder, Bulram, Boudh, Kulunke, Radha Krishen, Radha of the Sun, Radha of the Moon, Ooma Musheswar, Inder Koomaree, Urjoon, Suhden, Bheemsen, Narayan, Hunooman, Indraince, Burhmanee, Roodrance, Maha Luchmee, Bhugwatee, Kalee, Koomar, Munjoosree, Duckhen Kalee, Bulbhuder, Bhyrub, Kal Moorti Bhyrub, Mahakal, Singhnee, Bayaghurnee, Guroor, Kuwondh, Khayah, Gourse—representing the mythology of the Nepaulese, exhibited by His Highness the Rajah of Nepal.

#### Enamelling.

Enamelling (Cutch). This is a small knife, or dagger, watered like a Khorasan blade, which it probably is, the sheath only having been made in Cutch.

Enamelling (Sindh). This is a large knife, probably of Khorasan manufacture, with sheaths enamelled in Sindh.

Enamelling (Khyrpoor). This is another knife similar to the foregoing, sent among the collection from H. H. Meer Ali Moorad.

Gold bangles, enamelled. These form part of the collection from H. H. Meer Ali Moorad, and were not opened.

Enamelling (Indore). This is called "dasoostare," and is manufactured at Jeypore. R. C. Hamilton, Esq.

Model of a gateway (Cutch) in silver, with toujon and bearers. This is a model of the gateway to the palace of H. H. the Rao of Cutch at Booj. It was made at Booj.

Model of a musjed. This is a specimen of one of the wooden models for which Ahmedabad is famous. It is the property of Mr. Mansfield, of the Bombay Civil Service.

Model of a chuburdee, or Hindoo cenotaph (Cutch). This is made of red wood from Africa. It is 1 foot 3½ inches long, 11½ inches broad, and 10 inches high.

Model in wood of a Hindoo temple (Cutch). This is made of sandal-wood. It is 1 foot 7 inches long, the same broad, and 1 foot 1½ inch high. Rao of Cutch.

#### Caligraphy.

Persian manuscripts, executed by the Caligrapher to the King of Oude.

The same, executed with the nails of the thumb and second finger of the right hand.

Two specimens of caligraphy in Persian, two ditto in Nagree, and one ditto in Persian (running hand), executed at Ulwar, in the States of Rajpootana.

A highly-ornamented manuscript, in Persian and Guzeratee, containing an address of thanks to Sir Jamsetjee Jeejeebhoy, of Bombay, on occasion of his visiting his native town of Nowsaree, near Surat, and stating in detail the works he had constructed there at his own expense for gratuitous public use. The address is signed by two thousand persons. Deposited (at the request of the committee of native gentlemen who managed the address), by Jevanjee Pestonjee and Rustomjee Viccajee, Esqrs.

#### Drawings representing Occupations, Customs, &c.

Drawings on talc of the servants in North-west Provinces, and of the attendants and Indian articles employed in the Mahomedan ceremony of the Mohurrun, exhibited by Mrs. Royle.

Drawings on talc of agricultural operations, trades and castes, and servants, of southern part of the Peninsula of India, exhibited by T. Boileau, Esq.

Book, containing paintings, by Huldeo.

Water-colour drawing, by a native artist at Ulwar.

Set of water-colour drawings, representing the process of the opium cultivation and manufacture at Patna.

Another set, exhibiting the process of the shell bracelet manufacture in Dacca.



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ELEPHANT AND HOWDAH. INDIA.  
EXHIBITED BY HER MAJESTY THE QUEEN.

*From the Board of Administration at Lahore.*

H. H. MAHARAJAH GOOLAB SING, of Cashmere.  
H. H. the RAJAH of PATTIALLA.  
The RANEE SOOKHAN of SEHARUNPORE.  
The RAJAH of MUNDOTE.  
Major ABBOTT, Huzara.

*Contributors in the Bombay Presidency.*

H. H. MEER ALI MOORAD OF KHYRPOOR.  
RAO OF CUTCH.  
R. N. C. HAMILTON, Esq., Bengal, C. S., Indore.  
W. MANSFIELD, Esq., C. S.  
H. REEVES, Esq., C. S.  
Dr. STOCKS, Scinde.  
Dr. GIBSON, Botanic Garden, Depooree.

*Contributors in the Madras Presidency.*

THE RAJAH OF TRAVANCORE.  
THE ZAMORIN OF CALICUT.  
THE ZEMENDAR OF VIZIANAGRAM.  
NAWAB SIRBUJ-AL-MOOLK OF AURUNGABAD.  
G. S. NARRAIN, Esq., of Vizagapatam.  
T. L. BLANE, Esq., C. S.—Cannon from Kurnool.  
A. FREESE, Esq., C. S.  
DAVID PUGH, Esq.  
G. F. FISCHER, Esq., Salem.  
Dr. WIGHT, Coimbatore.  
Professor J. KEY, Madras.  
Captain H. S. BURNEY.  
W. ROBINSON, Esq., C. S.  
Mrs. BINNEY KEY.  
Mrs. S. GOODSIE.  
Dr. HUNTER, Madras.  
Lieut.-Col. TULLOCH, Commissary-General.  
Major-General CULLEN, Travancore.  
Major SMITH, M. E.  
Captain W. H. HORSLEY.  
Captain A. ORR, M. E.  
R. E. MASTERS, Esq.  
J. RHODES, Esq.  
Captain R. L. OGILVIE.  
D. MAYEW, Esq.  
Rev. C. F. MUZZY.  
T. BISHOP, Esq., Tanjore.  
Messrs. SIMPSON, of Madras.

*Contributions forwarded by the "Singapore Committee" from—*

GOVERNMENT OF LABUAN.  
H. LOW, Esq.  
SULTAN of LINGA.  
R. BAIN, Esq.  
Messrs. ALMEIDA, of Singapore.

*Contributions received in this Country to the Indian Department.*

Her Majesty has graciously permitted the presents of the Nawab Nazim of Moorshedabad, and of the Rajah of Travancore, to be exhibited in the Indian department. The former consist of an ivory howdah, with elephant trappings complete, all worked in gold and silver. A throne or native reception-seat, with canopy and silver framework to support the pillows. Two moorchals, an emblem of rank, and two palanquins, one for state occasions, and the other without a canopy. The present of the Rajah of Travancore consists of a splendid ivory chair of state, with footstool, beautifully carved and jewelled.

His Grace the DUKE of DEVONSHIRE exhibits a silver filigree snake chain.

Lieut.-Col. SYKES exhibits in Classes XVII., XXVI., and XXVII.

Lieut.-Col. CAULFIELD.—An Indian battle-axe.

Major MOORE, in Classes XX., XXIII., and XXV.

Captain R. STRACHEY, B. E., in Class XII.

CHARLES READ, Esq., in Class XXIX.—A sandal-wood box.

J. F. ROYLE, M. D., in Class IV.

Mrs. ROYLE.—A Benares green and gold shawl and turban piece, in Classes XV. and XXX.

J. CHAPMAN, Esq., in Classes IV. and XXIX.

Mr. J. CLARKSON, in Class III.

Mr. J. GLADDING.—Pith figures, in Class XXX.

Captain JAMES, in Classes I., III., XX., &c.

J. TAYLOR, Esq., in Class XI.—Drawings of natives of Dacca employed in spinning, warping, &c., and in preparing cloth.

A. A. ROBERTS, Esq., in Classes XV. and XX.

T. E. J. BOILEAU, Esq., in Classes I., XVII., XXI., &c.

R. G. POTE, Esq., in Class XXX.—Translated Indian and American inscriptions.

G. P. JENNER, Esq.—Picture of the mosque at Beejapore.

Colonel BAGNOLD.—Model of field-gun.

Captain GORDON.—A yataghan, from Afghanistan.

Mr. COPLAND.—Kinkhob and daggers.

Mr. SAMUEL.—Shells, chiefly from Singapore.

—CAMERON, Esq.—Ivory plaited into a mat.

P. SCOTT, Esq.—Silver filigree inkstand.

Mr. HODGSON.—Tray of wools and fibrous substances.  
Colonel GRIFFITH.—Model of great gun at Beejapore and of a gun-carriage.

Rev. W. ANTROBUS, in Class XXVI.

Dr. YOUNG.—Skins and heads of Indian animals.

Dr. BRUCE.—Stuffed specimen of Indian ox for the Ekka.

SAFFRON WALDEN MUSEUM.—Stuffed specimen of elephant for the Howda.

Mr. DURHAM.—A battle-axe, 376. Chowries from Arrakan.

*Observations on the Arts and Manufactures of India.*

The preceding enumeration of the articles in the Indian department of the Great Exhibition proves beyond doubt that India not only possesses a vast variety of raw materials, but is able to work them up into articles for daily use or for display on occasions of ceremony or of festivals, either of a religious or domestic nature. History informs us that India has from the earliest periods been distinguished for the richness of its natural products and for the elegance of its manufactured fabrics, also that an active commerce was established with Persia and Egypt, as well as with other northern nations, both by caravans with the aid of the "ship of the desert," and by sea through the medium of the Arabs who navigated the Persian and Arabian gulfs. The Chinese seem only to have made pilgrimages to India as the site of many of the shrines of Buddha. Though the Hindoos of modern times in general abhor the sea, yet the Ganges sustains its thousands of boatmen, and the coasts of Malabar and of Scinde produce a race of fishermen who pursue the shark for its fins and the polynemus for its swimming bladder, in order to satisfy the Chinese demand for gelatinous matters. That the Hindoos early paid attention to commerce we have proofs in the sacred law tracts called Institutes of Menu, promulgated at least 800 years B. C., and in which, as observed by Sir William Jones, "There is a curious passage on the legal interest of money, and the limited rate of it in different cases, with an exception in regard to adventures at sea, an exception which the sense of mankind approves, and which commerce absolutely requires, although it was not before the reign of Charles I. that our jurisprudence fully admitted it in respect to maritime contracts."—*Jones, 3rd Disc. and Rig Veda.*

Not only is it curious that the natives of India should so early have practised many of the arts and attracted the attention of foreign nations, but it is remarkable that they should have retained them through so long a series of ages, and carried them to so high a degree of perfection as to compete even in the present day with the looms of Lancashire and the fancy works of France. The ancient skill of Egypt we see only in the ruins of their temples or

in the paintings within their tombs. The arts of the Assyrians were hardly believed in until the disinterment of their cities revealed the skill, of which all traces have disappeared from the hands of its present inhabitants. China alone, like India, continues to practise arts which were not new even in times which are considered ancient in Europe.

The early civilization of India appears due to the natural fertility of the country and to the peculiarity of its climate, which enables its inhabitants annually to obtain two harvests off the same fields. Thus they sow wheat, barley, some pulses and oil seeds, in the autumn, and gather the crops in the spring of the year; while rice, the great and other millets with numerous pulses, are sown at the accession of the rainy seasons in June, and reaped at their conclusion in September. This facility in procuring food both for themselves and their cattle must early have afforded leisure to many, to pursue the arts which we have to notice, as well as to cultivate literature, and to originate some of the sciences which are not on the present occasion to be objects of our attention, such as grammar, poetry, philosophy, logic and law, geometry, arithmetic, algebra and astronomy, as well as medicine and chemistry, as we have endeavoured to show in a separate work, the "Essay on the Antiquity of Hindoo Medicine."

The diet of the natives of India is supposed to consist chiefly of rice: this is probably true only of Bengal; for in the north-western provinces wheat is much cultivated, and necessarily consumed, for it is not exported to any extent. The millets and pulses, as well as a variety of vegetables, form articles of diet, as well as milk and ghee, or clarified butter and condiments: and though the natives are thought to abstain from the flesh of animals, this is true only of particular castes, for many will eat fish, pursue the antelope, and hunt the wild boar—all for food. The Mussulmans, as is well known, abstain from the flesh of the hog as well as of the hare, but eat of the same animals as Europeans. Spirits distilled from sugar or the juice of palm-trees are extensively used, as well as the *aruk* of the Muohwa, or *Bassia latifolia*, which, being from a peculiar source, has been admitted into the Exhibition.

The clothing of the inhabitants must necessarily be suited to the climate, and for this the cotton, which is indigenous in their country, is admirably adapted. They were early acquainted with its use, for it is mentioned by Manu, and is supposed to be alluded to in the Rig Veda 1300 B.C. Calicoes and muslins being suited to the hot weather and rains, something more is required in the cold weather and rains, for which their stout calicoes, padded with raw cotton, are well adapted. But the wool of sheep, of the goat of the mountains, and of the camel of the desert, are all employed in the north-western regions of India, and woollen threads are mentioned by Manu. Silk of several kinds we have seen is indigenous in other parts of India.

The habitations of the Hindoo necessarily vary in different parts of the country, as the materials used depend upon its geological formation. In warm and moist parts, the bamboo serves every purpose, with palmyra or other large leaves, for roofing. If we go into Burma, we find the houses built on posts on the banks of rivers, so that the water flows under them. In the great plain of the Ganges, the huts are usually built of mud or of bricks, flat-roofed or thatched, and, in the hilly parts, of stone. In many parts the house and offices form a quadrangle, where the doors and small windows open inwards. In the Himalayas we have the houses and temples built of a framework of Deodar or cedar wood, filled up with stones, and with either flat or slated roofs, which project much beyond the walls, and cover open verandahs. The cattle are shut up in the lower, and the family occupy the upper story.

The appearance of the inhabitants of many parts of India is admirably represented in the series of figures exhibited from different parts of India. The soft and delicate-limbed Bengallee is well represented in the models from Kishnagurh, and the tall and slender inhabitant of

Southern India in the figures exhibited by Mr. Boileau. But that all are not so effeminate-looking may be seen in the model of the Jummabundi, where all the castes of the Dekkan are shown, as also in the well-clothed inhabitants from Belgaum and North-west India, and of Thugs in the model exhibited by Captain Reynolds.

In these models we also see the natives occupied at their various trades, as those of the carpenter, sawyer, and blacksmith. Some we see employed in ploughing, in grinding corn, in cooking, and in washing; men and women cleaning, spinning, preparing the thread, and weaving the cotton: others employed in pottery, in calico-printing, and working in the precious metals.

"That the useful arts have long been very numerous among the Hindoos," we have observed on a former occasion, is very evident, for Sir William Jones says, "That Europeans enumerate more than 250 mechanical arts, by which the productions of nature may be variously prepared for the convenience and ornament of life; and though the Silpi Sastra (or Sanscrit collection of treatises on arts and manufactures) reduces them to 64, yet Abul Fazl had been assured that the Hindoos reckoned 300 arts and sciences: now, their sciences being comparatively few, we may conclude that they anciently practised at least as many useful arts as ourselves."—(Jones, tenth disc.) With respect to their skill in many of these arts, we may adduce the unexceptionable evidence of the late excellent, widely and universally esteemed Bishop Heber: "To say that the Hindoos or Mussulmans are deficient in any essential feature of a civilized people, is an assertion which I can scarcely suppose to be made by any who have lived with them. Their manners are, at least, as pleasing and courteous as those of the corresponding stations of life among ourselves; their houses are larger, and, according to their wants and climate, to the full as convenient as ours; their architecture is, at least, as elegant. Nor is it true, that in the mechanic arts they are inferior to the general run of European nations. Where they fall short of us (which is chiefly in agricultural implements and the mechanics of common life), they are not, so far as I have understood of Italy and the south of France, surpassed in any great degree by the people of those countries."

The accounts which we have hitherto had of the tools and methods employed by the natives in the useful arts have been brief, and usually written by those unacquainted with the processes which they described, sometimes prompted by partiality, often dictated by prejudice. The present affords an excellent opportunity for those practically acquainted with the several arts in Europe to compare the tools used by the natives of India with the results of their labour, and both with the tools, textile fabrics, and cunning works of the hand, in wood, stone, horn, ivory, and in the precious metals from other parts of the world. It must first, however, be observed that the tools and machines which are exhibited have been collected from a vast extent of territory, the different parts of which do not differ more from each other in the state of the arts than sometimes do two parts of the same district, for instance, the plains and mountains. The tools, if we judge by their appearance, are, in general, rude enough and simple in construction; but, if we judge of their fitness by the effects which are produced, we must allow that they are as effective as tools can be, and, like more finished instruments, require only hands capable of using them. There is little doubt that among these are some which have a great resemblance to the tools represented in the Egyptian paintings; and some of them were doubtless the originals of such as are now employed in Europe.

One thing is very remarkable, and that is the few tools which they employ for processes, for which, in Europe, a variety are provided. Mr. Petrie, himself an engineer, has described how they make one tool serve a variety of purposes. For instance, a carpenter will have a chisel and a plane, and a tool of a wedge-like shape, sharp at one end and broad at the other, which they use for various purposes. "If they want an axe, they have a handle

with a hole, into which they put the above tool, and make an axe of it. If they want an adze, they turn the same tool round. When they wish to drive in nails or to make use of their chisel, they employ the same tool as a hammer. If they wish to split a billet of wood, they get two or three of these tools, and put them into the wood as wedges, and strike them with another billet, and thus they manage all their work: that tool, and the chisel and plane, are all they have, and they turn out very good work with them." He adds, that he "found them very teachable, and that, in a short time, almost an incredibly short time, they learned to make up the machines I required," that is, saw-gins. But the number of tools employed are much greater in other parts of the country, as for instance, the ivory carvers of Moorsheadabad, and the workers of silver filigree-work at Cuttack. But the elaborate carving of the Bombay furniture is said to be effected with a single tool, while the delicate and beautiful pith temples and figures from Trichinopoly are made with only two knives.

A higher state of invention is displayed in the auger, on the plan of Archimedes' screw, in which a semi-rotatory motion is given by moving a cylindrical piece rapidly up and down the shaft. This is probably a Chinese invention, as it seems to be best known in the southern parts. Such an instrument has only of late years been invented here, and a patent taken out for it. The natives of India make use of a very efficient drill, of which one has been sent from Berhampore, as used by the ivory carvers. A very complete set of the instruments used by the different trades in Nepal was sent, but many of the labels have been lost.

The ingenuity of the natives is conspicuous in their smelting iron, with no other means than what they procure on the spot where the ore is found; for instance, they cut down the wood and make charcoal, and with the large leaves of trees they make a bellows, of which a specimen has been sent from Mirzapore; but others, formed of two cylinders, and another with a double valve, show a higher state of invention.

Their ingenuity is further well shown in the skill with which they combine the soft resin of lac, sand, and powdered corundrum, so as to obtain a grindstone fit for polishing precious stones, as well as for sharpening the hardest steel.

Their mills for pressing oil seeds and for crushing the sugar-cane, and for separating cotton from its seeds, all display ingenuity, which there is no doubt must have been displayed at very early periods; but it is remarkable that the faculty of invention and the desire of improvement should for so many ages have remained stationary, for there is no doubt that many of the tools and machines might be improved, friction diminished, and yet their simplicity retained.

In Class VII. we have a few instances of the civil engineering of the natives, as shown in their contrivances for raising water as well as for crossing rivers. Only one model has been sent of a great public work, that of the great dam, or annicut weir, thrown across the Godavery river, in order to raise its water for the purpose of irrigating a large tract of land.\* Models of the great works which have been constructed for the Delhi and Doab Canals, and are now constructing for the Great Ganges Canal, would have been instructive even in Europe.

The models of the vessels which navigate the Indian seas have been sufficiently described in Class VIII. It is not probable, though far from impossible, but that some

\*The following is a statement of the chief measurements of this work, as detailed on the model:—

1. *Wahiswaram* Annicut across the Godavery River commenced 1847. Extreme length, 7,200 yards. Combined length of weirs, 4,600 yards. Height of weir, 12 feet. Depth of water during floods, 1½ feet. Extreme discharge, 180,000,000 cubic yards per hour. Quantity of water to be distributed for irrigation, 1,000,000. Extent of delta land to be irrigated, 1,000,000 acres. Length of irrigating tract, 100 miles. Greatest breadth of tract, 40 miles. Materials consumed up to December, 1850—Stone, 400,000 tons. Bricks, 4,400,000. Lime, 800,000 cubic feet. Required—Stone, 100,000 tons. Lime, 70,000 cubic feet.

hints may be obtained even from them, for the improvement of ship-building; for some of the vessels which navigate the China and Indian seas are remarkable for their swiftness. The first class "Sampan," from Singapore, is distinguished as such, while of the yacht "Wave," of which the model was taken from a fishing-boat of Bombay, it is said that no boat of European form and construction has yet been found to compete with her in point of sailing in moderate weather. The batelles of the Arabs, especially those of the Joaseme pirates of the Persian Gulf, called *Trankey* by Europeans, were, from their swift sailing, at one time very destructive to trade, because no vessel could escape them, and their weatherly qualities prevented square-rigged ships from capturing them, except in strong breezes. An Indian officer writes, that "The Arabs say their fame has now passed away, by the introduction of steam, previous to which there was no vessel ever built that could sail so close to the wind. The batelle always carries three suits of sails, the larger size of very fine cotton canvas, made at Bahrein, wove by hand; this sail is bent for light winds, and when the wind is too fresh to carry it, it is lowered, and a smaller one of coarser canvas bent: the third is for a fresh top-gallant breeze, but when it blows hard, they lower down the yard, and hoist a triangular sail like a jib.

"In 1817, whilst the writer was a lieutenant of the Honourable Company's gun-brig 'Psyche,' sailing along the coast of Scinde, in company with H.M.S. 'Eden,' Captain Loch, it had been blowing very fresh in the morning, when the 'Eden' came up with three of the Joaseme batelles, when under their small sails, with a native prize-boat in tow.

"On the 'Eden' firing a gun, the pirates lowered their sails, on which the 'Eden' shortened sail to topsails, and lowered a boat to board them—Captain Loch thinking they had lowered their sails for the purpose of being examined; but, on the boat sent from the 'Eden' closing with them, they hoisted their large sails which they had been bending, cast off the prize which they had in tow, and made off, passing between the 'Eden' and the Honourable Company's cruiser, receiving the distant fire of both vessels. The ships followed in chase the whole day, but without success, the pirates just keeping out of shot with their sweeps, and laying them in as the breeze freshened, by which means they gained on their pursuers."

In the collection of *Arms* we have a curious display of what would seem to be drawn from a museum, storing the productions of various ages, but which are actually the arms in present use in different parts of India. Thus we have the bows and arrows as well of Assam as of Northwest India. Shields from both localities, as well as from Cutch. Spears and battle-axes, two-handled swords, and daggers in every variety. Chain as well as sheet armour both for man and horse, with plumes for the helmet. Along with these we have the match-lock, flint-gun, and detonating lock; the two latter imitated from European models. Guns to be carried on camels, others to be mounted on lulls. Models of cannon and of mortars from Lahore, all indicating the attention paid by the natives of India to arms. This is especially conspicuous in the care and taste with which many of them, as well as the accoutrements, are ornamented. Among the curiosities may be mentioned the shield with four pistols concealed in its centre; complicated daggers, and one which, in striking, separates into five blades; a sword which separates into two, and another with pearls let into the middle of its blade. They all indicate the skill of the armourer, some of whom always form a part of the regular establishment of princes in the East. But the steel of the beautiful Damascus blades, the twisted barrels of the match-locks, and the skill with which the blade of one dagger is concealed within another, are to be admired as specimens of the workmanship of the natives of India as cutlers and gunsmiths, even in the midst of the works of industry of all nations.

*Agriculture* is an art which must have been earliest



practised by those nations who first gave up the nomade for a settled, necessarily an agricultural, life. There is every reason to believe that the Hindoos were among the earliest civilized nations. Indeed, their earliest records, the hymns of the Rig Veda, composed probably fourteen centuries B.C., contain supplications for abundant rain and for the fertility of the earth. The agriculture of India, like its other useful arts, has been unreasonably depreciated by some, and perhaps as erroneously overpraised by others. But the farming of different parts of the country varies much; but in all, the ryots pay great attention to the variety of soils, and to the plants which are best suited to each. They well understand the rotation of crops; the value of a fallow, as well as of weeding; and of manuring, though they only occasionally practise it, and for particular crops, as sugar-cane and tobacco; for the manure of the cattle is unluckily lost, from the unfortunate practice of using it as fuel. The practice of sowing several crops together is, no doubt, detrimental to some; but the Indian farmer adduces as his excuse that, in an uncertain climate, it gives him the advantage of escaping entire loss; for, when one crop fails, another may be saved by later rains. Great attention is paid to irrigation, which is as important in India as draining is in Great Britain, and this so much so that nothing would benefit the country so much as facilitating, by every method, the raising of water in most parts of the country for the purposes of irrigation.

The tools which are in use are sufficiently numerous, but they are rude in appearance, and simple in construction; though, as far as the effects are concerned in favourable seasons, they must be considered efficient; for the crops are usually luxuriant, and the proceeds abundant. It is remarkable that, in the whole of the west of India, from Guzerat to Mysore, a drill plough is employed for sowing the majority of crops. This is in the form of a three or four toothed harrow, behind each tooth of which terminates a bamboo tube, having its other end fixed in a central seed-cup, which has as many holes in its lower part as there are tubes attached to it. Colonel Sykes has observed that there are two kinds of drill plough; one heavy, called *maghur*, used for grain (pulse), wheat, and safflower; the other is less heavy, and called *pabhur*, used for millets and the smaller pulses, on light soils. When the cultivator wishes to sow a different grain in one of the furrows made by the teeth of the harrow, he stops up one of the holes, and has a separate tube following at a short distance behind. As the whole of the sowing apparatus is removeable at pleasure, he can use the body of the instrument, with its teeth, as a harrow, by laying aside the seed-cup with its tubes. The whole cost of the instrument is about three rupees. This drill-plough seems to have been used in Guzerat, and probably other parts, from time immemorial. We may suppose that it was used even in the time of Alexander, for Theophrastus describes the cotton as being set in the plains, arranged in rows, so as to look like vines at a distance. His informants could only have seen cotton cultivated in the western parts of India. In Europe, the drill-plough is said to have been first employed in Spain, towards the end of the seventeenth century. It has already been said, with reference to the tools, that "if the simplicity of his plough neither entails upon the native farmer additional labour, nor a more scanty harvest, nor an increased expenditure, we do not see that he is much to be pitied."

From the number of *Musical Instruments* which have been sent from India, it would appear that considerable attention must there be paid to music, and we might infer that the science had made some progress. It is treated of in one of their ancient *Upavedas*, and the natives have been heard to say that, though Europeans excel them in many things, they excel Europeans in music. But we know not any European who agrees in this. Orme, indeed, says "that their ideas of music, if we may judge from their practice, are barbarous." Sir William Jones, however, believed that "the Hindoo system has been formed on truer principles than our own; all the

skill of the native composers is directed to the great object of their art, the natural expression of strong passions, to which, indeed, melody is often sacrificed; though some of their tunes are pleasing, even to a European ear." The effects which they ascribe to some of their *raags*, or ancient melodies, are quite as extraordinary as those ascribed to Orpheus, or to Timotheus. Sir W. Ouseley says, "that a considerable difficulty is found in setting to music the *raags* and *raginis*, as our system does not supply notes or signs sufficiently expressive of the almost imperceptible elevations and depressions of the voice in those melodies, of which the time is broken and irregular, the modulations frequent, and very wild." It is remarkable that, in the histories of music, no notice is taken of that of India; though it is probable that an investigation of the musical instruments at present in use in India, and of their system of music, would throw much light upon that of the Egyptians, and of the instruments mentioned in the Bible.

Among the instruments at present in use in different parts of India, we find some rude enough in structure and appearance, but interesting, as natural objects made use of to produce sounds; as, for instance, horns, as blowing instruments; and gourds, as sounding-boards to their stringed instruments; bamboos, as pipes; and sets of them, of different sizes, to produce differences of sound.

The instruments used by the natives of Moorshedabad and of Benares consist of both wind and stringed instruments, and of drums, tambourines, and cymbals. A long list is given of the musical instruments used by the Arabs and Persians in the Introduction to Richardson's Dictionary, where it is observed, that "The Asiatics have a great variety of instruments; and many of those now in use amongst us, though considerably improved, appear to have been originally of eastern invention."

The Malay musical instruments are described as being so numerous, that about thirty are required to form a full band, or *gamalong*, costing about 2,000 rupees. Among these are conspicuous those in which gongs, as well as drums, of different sizes, and pieces of metal and of hard wood, of different lengths, are employed to produce different tunes, when struck with suitable gong—or drum—sticks.

The *Manufactures* of India may be noticed in the order in which they are arranged in the Catalogue. Among these, cotton still takes the precedence even in India, though it has greatly fallen off in importance since the machinery of Europe has been able to supplant, even in their own markets, the cheap and durable products of Indian looms. From an examination of the cottons produced in the places where the manufactures have attained the greatest perfection, we do not find that it is owing to any superiority in the raw material, but owing to the great pains taken by the native spinners and weavers, and their matchless delicacy of touch. Specimens of the cotton manufacture have been sent from Bengal, and from all along the Ganges up to the Jullundur Doab, from Almedabad and Surat on the west, and from the Circars on the south-east coast, also from as far south as Tanjore. It is curious that some of the places celebrated for their manufactures do not grow the cotton which they weave; for instance, Azimgurh, bordering on the Oude and Chundreyce, in the Gwalior territory. The Circars used to import their cotton from Central India.

In the Exhibition we have numerous indications of the pains taken by the Hindoos in the preparation of their cotton. First, several machines, rollers and churkas, for separating the seed from the cotton; also the bow, for further cleaning or teasing the cotton, other apparatus for preparing the thread, and looms for weaving it.

Mr. James Taylor, in the Report referred to at page 858, on the manufactures of Dacca, has given much interesting information on this subject, as well as sent a number of articles and drawings explanatory of the process. Thus, along with the raw cotton of Dacca is exhibited "the primitive instrument used for carding the fibres of the cotton." This is simply the jaw-bone of the Boolee fish

(*Sitarus boetis*), the teeth of which being fine, recurved, and closely set, act as a fine comb in removing minute particles of earthy and vegetable matter from the cotton. The Hindoo spinner, with that inexhaustible patience that characterises her race, sits down to the laborious task of cleaning with this instrument the fibres of each nob of cotton. Having accomplished this, she then separates the wool from the seeds by means of a small iron roller, which is worked with the hands, backward and forward, on a small quantity of the cotton seeds placed upon a flat board. The cotton is next bowed with a small bow of bamboo, strung with a double row of catgut, muga silk, or the fibres of the plantain tree twisted together; and having been reduced by this instrument to a state of light downy fleece, it is made up into a small cylindrical roll (*pana*), which is held in the hand during the process of spinning. The spinning apparatus is contained in a small basket or tray, and consists of a delicate iron spindle (*stakooa*), having a small ball of clay attached to it, in order to give it a sufficient weight in turning, and of a piece of hard shell, imbedded in a little clay, on which the point of the spindle revolves during the process of spinning. With this instrument the Hindoo women almost rival Arachne's fabled skill in spinning. The thread which they make with it is exquisitely fine, and doubtless it is to their delicate organization, and the sensibility with which they are endowed by nature, that their inimitable skill in their art is to be ascribed. The finest thread is spun early in the morning, before the rising sun dissipates the dew on the grass; for such is the tenuity of its fibre, that it would break if an attempt were made to manufacture it during a drier and warmer portion of the day. When there is no dew on the ground in the morning to indicate the presence of moisture in the atmosphere, the spinners impart the requisite degree of humidity to the cotton by making the thread over a shallow vessel of water. The various implements used in the preparatory processes of weaving are the reeds for winding the thread, the hand-wheels for warping, the sley-hook and reed, and the apparatus for forming the heddles. During the process of preparing the thread, and before it is warped, it is steeped for a couple of days in fine charcoal powder soot, or lamp-black mixed with water, and after being well rinsed in clear water, wrung out, and dried in the shade, it is rubbed with a sizing made of parched rice (the husk of which has been removed by heated sand), fine lime and water.

The principal varieties of plain muslins now manufactured at Dacca are, Mulmul Khas, Ab-ruwan, Shub-num, Khasu, Jhuna, Sircar Ali, Tun-zeb, Alabullee, Nyanzook, Boddum Khas, Turundam, Surbutees, and Surbund—names which either denote fineness, beauty, or transparency of texture, or refer to the origin of the manufacture of the fabrics, or the uses to which they are applied as articles of dress. The finest of all is the Mulmul Khas (literally muslin made for the special use of a prince or great personage). It is woven in half pieces, measuring 10 yards in length and 1 yard in breadth, having 1,900 threads in the warp, and weighing 10 siccas (about 3½ ounces avoirdupois). The finest half piece that I have seen weighed 9 siccas. The price is 100 rupees. Some of the other muslins are also beautiful productions of the loom, as Ab-ruwan, compared by the natives, from its clear pellucid texture, to “running water.” Shub-num, so named from its resemblance, when it is wetted and spread upon the bleaching field, to the “evening dew” on the grass. Jhuna, a light, transparent net-like fabric, usually made to order, and chiefly for natives of rank and wealth, worn by the inmates of zenanas and dancers, and apparently the cloth referred to in the classics under the figurative names of *Tela ornarum*, *Ventus textilis*. All these muslins are made in full pieces of 20 yards in length by 1 in breadth, but varying considerably in the number of threads in the warp, and consequently in their weight.

Of figured fabrics, as striped (Doorea), chequered (Charkanee), and flowered (Jamdanee), there exists a

considerable variety, both in regard to quality and pattern. The flowered muslin was formerly in great demand both in India and Europe, and was the most expensive manufacture of the Dacca Urungs. There was a monopoly of the finer fabrics for the Court of Delhi: those made for the Emperor Aurungzebe cost 250 rupees per piece. This muslin is still much admired, but it is now seldom manufactured of a quality of higher value than 80 rupees per piece.

Omitting the second-rate kinds of cloth, as Sarrees, Boonees, Baftas, Jon, Ekpattus, Gamchas, &c., now entirely made of English yarn, imported into the district, and which constitute the great bulk of the Dacca cotton manufacture, the next class, of which specimens should be exhibited, is that of fabrics of a mixed texture of cotton and silk. They are designated by various names, as Nowbutta, Kutun, Roomee Apjoola, and Sirka; and when embroidered with the needle, as many of them frequently are, they are called Kusheedu. The silk used in their manufacture is the indigenous Muga silk of Assam and Sylhet, but the cotton thread employed is now almost entirely English yarn, of qualities varying from No. 30 to 80. These cloths are made exclusively for the Jedda and Bussora market, and a considerable stock is yearly imported in the Arab vessels that trade between Calcutta and these ports. Pilgrims, too, from the vicinity of Dacca, not unfrequently take an investment of them, which they dispose of at the great annual fair held at Meena, near Mecca. They are used by the Arabs chiefly for turbans and gowns. The golden colour of the Muga silk gives to some of these cloths a rich lustrous appearance. A few pieces, made of native-spun cotton thread, and of the best kind of Muga silk, would, I have no doubt, be admired in this country.

Embroidery (Zur-dozee) is an art, in which the Mahomedans of Dacca display a degree of skill almost equal to that exhibited by the Hindoos in weaving. They embroider Cashmere shawls and scarfs, also muslins, and net fabrics with silk, gold and silver thread. These fabrics are much esteemed in this country, and are probably still unrivalled by similar productions in any part of the world.

Another branch of needle-work allied to embroidery, which is carried on here, is that of flowering or ornamenting cloths with cotton thread (Chikan-kavi). The dresses of Mahomedans are frequently worked in this manner, and two descriptions of it called Tartor and Sumunderludur, in which the texture of the cloth is broken down with the needle and converted into network, are held in the highest estimation.

In commissioning fine muslins from Dacca, ample time should be given for their manufacture. The time required for the preparation of a piece varies from one to four months, according to the quality of the fabric, the latter being the period necessary for the weaving of a half-piece of Mulmul Khas. The best season for making this kind of muslin is during the months of May, June, July, and August. If several pieces of the finer kinds were to be manufactured, a full year's notice would be required in order to procure the necessary quantity of thread.

Chittagong, which formerly possessed a factory subordinate to the one at Dacca, still manufactures inferior fabrics of strong texture. The rough towels made here are of an excellent quality; they are stout and durable, and would be found to be superior to the Baden towels, now so much used in dressing rooms in this country.

The Garrow, Tipperah, and Chittagong hills produce a large quantity of inferior cotton, called Bhoga. It is the principal article of traffic which the hill people bring down to the plains. It is used in the manufacture of the inferior kinds of hummums, baftas, boonees, sarees, jore, &c.; also for making ropes, tapes, and the coarsest of all fabrics, viz., garlahs and gazechs, which are commonly used for packing other cloths, and for covering dead bodies, for which purpose a large quantity of these is consumed annually both by Hindoos and Mahomedans.

As Dacca was formerly famous for its muslins, so were

the Northern Circars for their long cloths. The former has sent some beautiful specimens of muslin, both plain, figured, and embroidered with silver. But Chandeyree, far in the interior of India, in the Gwalior territories, has also sent some beautiful muslins. These are manufactured of cotton grown at Nimar, some hundred miles distant. From the dryness of the climate the weavers, who are Mahomedans, are obliged to weave these fine muslins in underground workshops. The finest piece of long cloth has been sent by Mr. Masters, from Jugginpettah, in the Northern Circars. Fine muslins have been sent from Arnee and from Oopada, and beautifully embroidered beetle-wing dresses from Madras.

Some of the fabrics of cotton are extremely interesting as specimens of skill in weaving, as those in which patterns are woven throughout the piece, and others as specimens of double weaving; whence two distinct coloured cloths appear to be united together, and alternately show themselves on opposite sides.

The woollen fabrics are not so likely to be of a superior quality from a hot country, but it is interesting to have them from the mountains of Mysore and the plains of North-Western India, and also of the wool of the sheep and of the hair of the camel. The kid cloth of Cashmere is beautifully soft, and a new fabric called Parcevuz, of which the pile of one surface is formed of loops, is interesting, but the shawls of Cashmere are celebrated throughout the civilized world. Moorcroft informs us that the wool used in the manufacture of the shawls of Cashmere is of two kinds. Of these one is called Pashm shal, and the other Asali toos, the former being obtained from the goats in a domesticated state, and the latter from the wild goats and wild sheep, &c. All these animals, as well as the yak and dog, in the elevated, cold, and dry regions of Tibet, being furnished with a fine down, or hair-like wool, under the coarse common outer wool. This is brought from the different parts of Tibet to Ladakh, where it is purchased for or by the Cashmerians, and carried into their valley. Much of it is white, and sold a few years ago for 4s. a pound; the dark-coloured is well suited for dyeing. The long hairs are picked out, the remainder carefully washed in rice-water, and then hand-spun by women. A variety of hands are necessarily employed in the manufacture of shawls. An artist designing the patterns might obtain a sale for them even in Europe, as they are so generally admired and imitated. A man is employed in determining the quality and quantity of thread required for a pair of shawls, and another in arranging the warp and wool (the former of which is generally of silk) for the border. The yarn is first dyed; the Cashmerians professing to employ sixty-four different tints. The shawl is carefully washed when the weaving is completed, and the very finest are said to be washed in a lather formed of soap berries.

A sub-committee having been appointed in Calcutta to report upon the subject of Cashmere shawls, Benares' broadens, and Dacca muslin, have furnished a report which is particularly valuable, from Dr. Falconer, one of the members, having been for some time in Cashmere, and acquired information which is not otherwise obtainable. It is therefore here published.

"The Sub-Committee appointed to report on Cashmere shawls, Dacca muslins, and other articles of manufacture that may require considerable time for their preparation, having met and considered the subject referred to them, submit the following as their report:—

"1. Cashmere shawls. The Sub-Committee are of opinion that the Cashmere shawl fabrics are more likely than any other article of Indian manufacture to admit of successful competition with the productions of the looms of Europe, and that no exertion ought to be spared to get the best description procurable. These are not readily found in the market, and, if made to order, a pair of shawls of the richest pattern will occupy from a year to eighteen months in the manufacture.

"2. The articles made of shawl wool are of infinite variety, ranging from carpets, quilts, saddle-cloths, cano-

pies, dish-covers or napkins, to shawls, gown-pieces, cravats, turbans, choghas or cloaks, waistcoats, stockings and gloves, embracing almost every kind of fabric used as an article of dress. But the Sub-Committee are not prepared to recommend that all these fabrics should be sent to the Exhibition. They leave the consideration of the selection to the deliberation of the General Committee.

"3. The principal articles of peshmina or shawl-wool manufacture may be classified under the following heads:—

- I. Doshalla or long shawls  $3\frac{1}{2}$  by  $1\frac{1}{2}$  guz.
- II. Kussaba or square shawls  $1\frac{1}{2}$  or  $2\frac{1}{2}$  guz square.
- III. Jamewars or striped shawl pieces  $3\frac{1}{2}$  by  $1\frac{1}{2}$  guz.
- IV. Ulwan or plain white shawl cloth.
- V. Miscellaneous, such as carpets, canopies, saddle-cloths, and various articles of dress, stockings, gloves, turbans, &c.

"I. *Doshallas or Long Shawls.*

"4. Doshallas or long shawls, invariably manufactured and sold in pairs, are the most esteemed production of the looms of Cashmere. They vary greatly according to the richness of the patterns, all of which are distinctly named, and according to the colours of which the dyers profess to make upwards of fifty tints, but the Sub-Committee will confine themselves to the leading colours, viz., black, white, crimsons, purple, blue, green, and yellow.

"5. Of the finest doshallas, the principal varieties in pattern depend upon the amount of decoration of mitton or centre-piece, the pulla or border-pieces being always richly flowered. The following are the leading kinds:—

1. Khale mitton or plain field shawls.
2. Poor mitton or full-flowered field.
3. Chand-dar, chantahi-dar, alifla koonj bootha-dar.

According to ornament, being a moon or circle in the centre, four half moons, green sprigs on a plain ground; a group of flowers at the corners, or any combination of these.

"6. The Sub-Committee would restrict their consideration of the colours to eight kinds, viz.: 1. White, sada or safad. 2. Black, mooshke. 3. Crimson, goolanar. 4. Scarlet, kermisi. 5. Purple, ooda. 6. Blue, ferozee. 7. Green, zingaree. 8. Yellow, zuril.

"6j. Fine long shawls with plain fields of handsome patterns (khalli mitton), are procurable at about 1,200 rupees per pair; and full flowered, poor mitton, at about 1,500 rupees. Taking the average of these 1,350 rupees, as representing the price of the third class, including chand-dar, chantahi-dar, &c., and as the average price of the whole; and supposing a pair of each of the above eight colours were ordered of the three several classes of pattern, we should have twenty-four pairs of shawls, at 1,350 rupees, making 32,400 rupees in all.

"7. In framing this part of the estimate, the Sub-Committee do not mean to recommend that the order should be so extensive; they are simply desirous of furnishing to the General Committee the detailed grounds upon which a suitable selection could be made. If the shawls were ordered single, instead of in pairs, which they believe to be practicable although not the custom, the estimate would be reduced to 16,200 rupees. Further, they would suggest that some of the wealthiest native gentlemen about Calcutta be solicited to send their best shawls of different colours for the inspection of the General Committee so as to simplify the labour of selection. The government tosha khana might also furnish a considerable number of various patterns.

"II. *Kussabas or square Shawls.*

"8. Kussabas or square shawls, called also Roomals, are of two classes, viz., Kance roomal, or loom-manufactured, and Unlee roomal, or needle-embroidered shawls. In form they are more suited to the taste of the Europeans than the long shawls, and are made and sold singly. They run through the same range of colour and pattern as the long shawls, and the Sub-Committee frame their provisional estimate accordingly. The needle-worked kinds are

much cheaper than the loom-manufactured, and the embroidery is far superior in pattern and execution to the scarfs and shawls embroidered at Delhi. Assuming eight colours and three patterns of each of the Kance roomal, at an average of 400, 300, and 500 rupees each, twenty-four square shawls would cost 9,600 rupees; and the same number of needle-worked of Umlee roomals, at an average of 225, 150, to 300 rupees, would cost 5,400 rupees.

“ III. *Jamewars.*

“ 9. Jamewars form the third great class: they are handsome striped loom-wrought fabrics of rich patterns, of which the French striped coloured muslins are printed imitations. They are manufactured of an infinity of patterns, but the principal kinds are the Rega-bootha or small flowered, the Kirkha-bootha or large flowered, and the Jhaldar or netted patterns. The most elaborately worked cost as much as 2,000 rupees each. Ten pieces would include a fair variety of patterns at an average, say of 600 rupees each, making 6,000 rupees.

“ IV. *Ulwan.*

“ 10. Ulwan, or plain shawl wool-cloth, is woven like plain muslin without flower or ornament, and is made in pieces of various lengths. It forms the centre portion or mitton of shawls, and is used for turbans and cummurbunds. It is well adapted for ladies' dresses. Eight pieces of twenty yards each of the different colours above named, at six rupees per yard, would cost 960 rupees.

“ 11. Another fabric is made which may be included under the same head as Ulwan, called Mulcedah pushmina, being intended to imitate European broad cloths. It is formed of Ulwan, manipulated in a peculiar manner in water, so as by rubbing to tease out the wool of the thread and raise it into a nap. A piece of twenty yards, at six rupees, would cost 120 rupees.

“ 12. A coarser fabric, of the same class, is manufactured in the Hill State, to the north-west of Simla, called Puttoo peshmina, which possesses great softness and warmth—in many respects rivalling fine broad cloth.

“ V. *Miscellaneous.*

“ 13. The miscellaneous articles of shawl-wool fabric are exceedingly numerous. They may be classified—

“ 1. Articles of dress:—Choghas Ulkbaliks, Pasteen Shumlas, or Cummurbunds and Loongees, made in imitation of the silk Loongees of Mooltan Gosh-pech, or Dusters turban pieces. Gulloobunds or cravats, of great variety. Pistan Bunds or neckerchiefs. Nukash Zerposh or trousers. Takhum caps. Toorab. Short stockings (Gooldar), flowered and Nuhramut stripes. Moseh long stockings. Charkhanna or loose robe for women.

“ 2. Articles of furniture:—Khalin Peshmina carpets. Durpurda and Takposh screens and curtains, for doors, windows, and recesses. Pulung-posh or quilted coverlets. Khan-posh, dish-covers, and napkins, horse furniture, &c. Kuzzur-i-asp, saddle-cloths. Kuzzur-i-fil, elephants' housing. Sacewan or canopies, tents, &c.

“ 14. The Sub-Committee have not gone into the details of the prices of these miscellaneous articles, as they do not consider the arrangements requisite for procuring them to be of the same emergent character as those required for the leading classes of the shawl articles. With regard to the latter, they are of opinion that no time should be lost in determining the number and variety of the articles required for the Exhibition, and in submitting a representation to Government on the subject, that the necessary measures for procuring them may be put immediately in operation.

“ 15. The Sub-Committee find, from a memorandum communicated to them by one of their members, that Kimkhab, Tass, Budlas, and other descriptions of ordinary brocades, are readily procurable to order on two months' notice, at Kassim Bazaar, and Benares. With respect to these articles, therefore, it is not necessary to anticipate the reports of the local committee at those stations. But there is a gorgeous and very expensive class of brocades, manufactured with solid gold wire

drawn out into fine thread, which cannot be had without six or eight months' previous notice. They would recommend, therefore, that three pieces of Kim-Khab, and three of Tass, of the latter description, be provided for on emergent order.

“ 16. With regard to Dacca muslins, the Sub-Committee understand, from a memorandum furnished by Mr. Agabeg, that the finest descriptions, such as Mulmul-Khas, take fully twelve months to prepare, one sicca weight of the thread requiring three months to be spun. They would recommend that measures be adopted for an immediate order of the fabrics of this description. A detailed memorandum with an estimate of the prices are appended.

“ 17. The procuring of the more ordinary sorts of Dacca muslin may be left to the Dacca Local Committee to arrange for.

“ 18. The Sub-Committee have confined their attention to the three classes of fabrics above reported on, viz.: Cashmere shawl fabrics, brocades, and Dacca muslins.

“ H. FALCONER, M.D.

“ JOSEPH AGABEG.

“ JORYKISSEN MOAKERJEE.”

*Silk* has long been known in India, but is supposed by some to have been brought from China, as in some old works it is called cloth of China; but we know that there are also several species of silkworm, as the Tussur, Eria, Mooga, and Gooree, indigenous to the forests of different parts of India. The silk of Bengal was originally inferior in quality and carelessly wound. The East India Company, in the year 1757, sent a Mr. Wilder to improve the winding of silk, and, in the year 1769, other Europeans, as drawers, winders, reellers, and mechanics. The filatures were all in Bengal, to the southward of 26° of N. latitude, for the north-west provinces are much too hot and dry for the silkworm. It is probable that the silk culture might easily be carried on in the valleys of the Himalaya. Some fine specimens of raw silk have been sent from Bengal, as well as from Mysore. The silk goods sent by Messrs. Jardine and by Messrs. Vardon have been much admired, as well as the Cashmere silks, for their substantial nature and for their moderated tone of colouring. On the Bombay side we may see that the raw material is imported from Bengal and from China, and that the manufacturers have attained a high degree of skill and excellence. Among these are pieces of silk which, like the cottons mentioned before, are remarkable for being of different colours on the two sides. These are from Poona and Ahmednuggur.

Both calicoes and muslins, as well as woollen cloths, are employed by the natives to embroider, and some beautiful specimens in all the materials, and from different parts of India, have been sent to the Exhibition; and whether we examine one worked at Dacca or at Delhi, Madras or Mooltan, Cashmere or Khyrpoor, and whether in silk, silver or gold, we see great variety and taste displayed in the patterns, for even the most flowery or gorgeous are so kept within bounds as to appear never to exceed what is appropriate to the purpose for which the article is made. This we see equally in their woven as in their embroidered fabrics, as much in the rugs of Ellore and the carpets of Mirzapore and Goruckpore as in the shawls of Cashmere, and not more in the shawls than in the carpets of that far-famed valley.

India has long been famous for its steel, and the natives were early acquainted with the process of welding iron. Golden armour is frequently mentioned in the Rig Veda, that is 12 or 1400 years preceding the Christian era; and different parts of the country are famous for their works in copper and brass, as well as in silver and gold. As the natives employ the two first for the greater part of their cooking utensils, and the two last both for useful and ornamental purposes, there has always been a great demand for these different works in metals: all are remarkable for the goodness of their shape, whether made of copper or brass, or of the inlaid work, called Bidry.

There is great elegance in the silver service, inlaid with mosaic from Cashmere. The same elegance of form is seen in the rose-water sprinklers, or *goolabas*, which are employed to sprinkle rose-water over departing visitors. Much of the jewellery, though rich and handsome, is peculiar, because the tastes of the natives, and the modes of wearing it, differ from those of Europeans. A great variety as well of jewelled boxes have been sent by the Maha Rajahs of Nepal and Cashmere, and by the Rajahs of Rajpootana and of Cutch. The gold and silver girdles of Vizianagram are as perfect in workmanship as the gold chain of Trichinopoly is elegant.

Dacca is one of the places celebrated for its silver filigree work; Cuttock and Agra are others: from all of which specimens have been sent. The articles usually made are bracelets, ear-rings, brooches, and chains; also groups of flowers, attardans, and small boxes for natives, of all of which beautiful specimens have been sent. Mr. Taylor says, the design best adapted for displaying the delicate work of filigree is that of a leaf. It should be drawn on stout paper, and of the exact size of the article intended to be made. The apparatus used in the art is exceedingly simple, consisting merely of a few small crucibles, a piece of bamboo for a blowpipe, small hammers for flattening the wire, and sets of forceps for intertwisting it.

The drawing of silver and gold wire, *i. e.* silver covered with gold (used as thread in embroidery), is extensively carried on at Dacca. Benares is also celebrated for the art. The preparations of the gold-wire for the fabrics of Boorhanpore has already been described at p. 920. There are several varieties of silver and gold thread (Badla) made at Dacca, as Goolabatooro for the embroidery of muslins and silks; Goshoo for caps and covering the handles of chowries; Sulmah for turbans, slippers, and hookah snakes; and Boolun for gold lace and brocades. Some of it is drawn as fine as a hair.

The beauty of form is still more conspicuous in much of their *Pottery*. Many of the forms are those which are most admired, as being of classical shapes. Some of the vases even look almost as if they were of Etruscan origin. There is no reason to believe that the natives have ever had anything but their own unerring taste to guide them, whether at Bhagulpore or Moradabad, at Kotah, Ashmedabad, or near Nagpore.

The natives of India having long been acquainted with a number of manufactures which are supposed to have originated in Europe, but of which there is no doubt that traces may be found at still earlier periods in the East. Some of these are of a chemical nature, as for instance, the crystallization of sugar and the manufacture of indigo, as well as that of gunpowder, of which several specimens were sent in the powder-flasks which accompanied many of the matchlocks, for which their country even now supplies the saltpetre for Europe. Red ink they obtain by the action of reagents on safflower, &c.; and black ink both by a process similar to our own, and by another which more nearly resembles that for printers' ink, which is better suited to their paper. Paper is another of the useful inventions which has long been known in the East. In India is made from a variety of materials, as from cotton, and of late years from plantain fibre. In Cashmere the fibre of hemp seems also to be employed, but throughout the Himalayas the pulp obtained from the fibre of *Daphne cannabina* is universally employed. With it have been made the large sheets of Nepal paper. The manufacture of leather seems also to have been long practised, and to have been used for making shoes and shields. The specimens which have been sent are of excellent quality; but these no doubt owe their peculiar qualities to European superintendence, as the leather from Calcutta was prepared by the Messrs. Toil, and that from Hoonsoon at the Government cattle establishment of that place. But Cashmere has been long famous for its leather; and Moorcroft, an excellent judge, describes it as "strong, solid, heavy, and pliable," and this without European aid, as in the case of the coloured specimens of leather from the Rao of Cutch. Glass-

making is another art with which they are acquainted, but in which they have made little or no progress, as the glass is discoloured and used only for bangles and small bottles. These are the chief articles of manufacture; but the author has succeeded in getting the glass-blowers of the north-west to make him very fair barometer and thermometer tubes out of broken European glass.

Dyeing is a strictly chemical art with which the Hindoos have been acquainted from very early periods, though no improvements appear to have been made in it for ages. This country yields an abundance and a variety of raw materials as we have seen in the list of dyes; the mordants which they employ are chiefly alum and salts of iron, while the alkalies and acids which they likewise employ can be considered as useful only in changing the shades of colours. Calico-printing is universally acknowledged as being of Indian origin, and an art which was known to the Egyptians, as mentioned by Pliny, in a passage frequently quoted. Though the art has so greatly advanced in Europe, the Indian patterns still retain their own particular beauties and please multitudes of admirers, due no doubt, in a great measure, to the command which the natives of India have of colours, and the admirable taste with which they harmonise complicated patterns. Of some parts of the art, as for instance printing on gold, which has been only recently practised in Europe, some excellent specimens have been sent from Western India.

Having so early practised many of these arts, it is very remarkable that the Hindoos should for so many ages have remained satisfied with the progress they had made. This has been ascribed in a great measure to the distinction of castes, and to the political condition of the people. That they are capable of greatly improving in the different useful arts, is evident from the works which are turned out of the Government magazines and arsenals, and as may be seen in the accoutrements, and in the models of the artillery from the different Presidencies. The same thing may be seen in the teak-shipping built at Bombay. The saw-gins made in India are said to do their work as efficiently as those of England or of America. On the present occasion we have harness as well as boots from the Messrs. Monteith of Calcutta, which would do credit to any shop in London or Paris. So also the ropes made in imitation of those in use in Europe, as sent by Messrs. Harlon and Messrs. Thompson, from Calcutta. The neatness of their work may also be seen in the model of the crushing-machine sent by the Commissary-General of Madras, and the delicacy and accuracy of machinery made by their hands in the coin-sorting machine of Major Smith.

The Hindoos are remarkable not only for the exquisite skill which they display in the fabrication of the smaller works of fancy, but for the patience and resolution which they display in the excavation of their rock-cut temples, and for the beautiful polish which they have given to the surface of the hardest rocks. Dr. Kennedy has described the tools with which the Hindoo workman performs these works. They consist of a small steel chisel and of an iron mallet—"with such simple instruments they formed, fashioned, and scraped the granite rock which forms the tremendous fortress of Dowlatabad and excavated the wonderful caverns of Ellora; for it seems by no means probable that the Hindoo stone-cutters ever worked with any other tools." The mode in which they polish these masses of granite are the same in principle as has already been described as being practised by the stone-polishers of Cambay, pounded corundrum mixed with melted bees' wax being let into the hollow of a heavy block of granite, which is moved backwards and forwards until the required polish has been produced. We may be less surprised, therefore, with the polish given to the smaller articles of agate and cornelian, for which not only the workmen of Cambay but also of Cashmere have so long been distinguished. In the jewel-cases of the Indian department, we have some beautiful specimens from Lahore of crystal cups as well as agate boxes inlaid with precious stones. Baron Hugel states having seen in Cashmere a vase of

crystal which four men could scarcely lift. There could be no difficulty in carving in marble or other stone, but we cannot the less admire the beautiful patterns of the stone screens from Mirzapore. Such screens usually of marble are often used for surrounding the tombs in the old buildings of Agra and of Delhi. The skill in carving is equally displayed in softer materials, as in sandal-wood and ebony, and also in the black-wood (*Dalbergia latifolia*), of which so many specimens may be seen in the furniture made at Bombay. This skill is also displayed by the ivory-carvers of Berhampore, the shell-workers\* of Dacca, and in the horn-work of Vizagapatam and of Vizadrong, and in that of the cocoa-nut at Tanjore, and still more in the delicacy with which the figures of the Rajah and Ranees of Travancore are produced, in so soft and yielding a material as pith.

The fine arts have hardly attained that excellence in India as to require much notice, except as connected with the objects within the limitations of the Exhibition. Painting has never attained to any excellence, though the natives are admirable delineators of some objects, as of natural history, which they can copy to a hair, without, however, any attention to perspective. The paintings on tale which are exhibited are interesting as exhibiting trades and costumes. Their sculpture, though employed in the representations of their gods and goddesses, has never succeeded in giving good views of the human figure; and yet they would seem capable of effecting much, for the models of the figures of the various castes are very successful in the variety of expression which they impart, and their success is great in the carving of some animals; as, for instance, in the head of the elephant in ivory, from Berhampore; also in the stone figures of the elephant, rhinoceros, and sacred ox. Their stone, wood, and ivory carving might even be considered as coming within this section of the fine arts, from the beauty of the patterns and the elegance of effect which is produced.

Engraving on gems has long been practised in the East, and with great success, as far as ornamented letters are concerned. Of these there are some favourable specimens from Delhi; and from Madras, we have stones engraved, representations of a lighthouse, and monuments.

The mosaics from Agra, as shown in the marble chess-table inlaid with agates, as well as in inkstands, card-trays, &c., are favourable specimens of the art. Though it is sometimes said that this art may have been introduced into Agra from Italy, it is not more elegant in pattern than the inlaid work, for which the metal-work called "bidry," is conspicuous, and for which the inlaid silver service and bedstead from Cashmere is so remarkable. This beauty of pattern, so conspicuous in the shawls of Cashmere, is also displayed with remarkable taste in the several boxes and pen-and-ink trays from the same part of India.

Architecture is at least one of the fine arts in which the Hindoos have excelled, as their style is their own, and the effects which they produce peculiar and striking, and this whether we examine the carved temples of Ellora, or the pagodas of the Peninsula; of these, the pith models are the only representatives in the Exhibition. The models which are exhibited from Benares and Mirzapore show the ordinary form of the temples in the valley of the Ganges, while the models of the Masjid or mosque and Hindoo temple from Ahmedabad show a different style of architecture.

From the very cursory view which we have taken of the arts of India, we cannot but allow that the natives of that country, with but simple means and their unassisted efforts, have produced works which we cannot but admire, even after wandering in all the courts of the Crystal Palace dedicated to the arts of Europe; and, if we doubt our own judgments, we may refer to the numerous artists

\*The manufacture of shell bracelets is one of the indigenous arts of Bengal, in which the caste of Sankari at Dacca excel. The *chanks* of which they are made are large convolute shells (*Voluta granis*, Linn.), from six to seven inches long, and of a pure white colour. They are imported into Calcutta from Rannad and Southern India, opposite to Ceylon, and from the Maldivé Islands.

who may daily be seen employed in drawing and studying the works of a people whom many consider as placed beyond the pale of civilization, but among whom we may see the practice of many useful arts, which we sometimes fancy our own, because the Moors introduced them into Europe; and we may observe, also, the germs of some discoveries which we know have only recently been matured in Europe, though we have no means of judging whether the idea may not, in some instances, have come from the East.

We cannot do better than conclude, therefore, these hastily-written observations on the arts and manufactures of India, in one of the mottoes of the Official Catalogue—  
"SAY NOT THE DISCOVERIES WE MAKE ARE OUR OWN:  
THE GERMS OF EVERY ART ARE IMPLANTED WITHIN US,  
AND GOD, OUR INSTRUCTOR, FROM HIDDEN SOURCES,  
DEVELOPS THE FACULTIES OF INVENTION."

## CEYLON.

NORTH AREAS, I. J. 31.

COLLECTION OF NATURAL PRODUCTIONS and MANUFACTURES of the ISLAND of CEYLON:—

Rock Crystal. Iron and common quartz. Amethyst. Garnet. Cinnamon stone. Hornblende. Hornblende. Hypersthene. Common corundum.

Ruby. Chrysoberyl. Zircon. Mica. Adularia. Common felspar. Green felspar. Albite. Chlorite. Pinite. Black Tourmaline. Calc-spar. Bitterspar. Apatite. Fluor-spar. Chiastolite.

Iron pyrites; magnetic iron pyrites. Brown iron ore. Spathic iron ore. Magnetic iron ore. Titaniferous iron ore. Ironglance. Manganese. Molybdenglance.

Tin ore. Arseniate of Nickel. Plumbago. Epistilbite. Gadolinite. Wolfram. Crichtonite. Ilmenite. Pyrochlore. Binnerite. Ceylonite. Cabook. Kaolin.

[The geology of Ceylon is imperfectly known in detail, but it appears that various porphyritic rocks and gneiss chiefly prevail, the latter covering the largest area, but the former exhibiting many very interesting varieties. Sandstone occurs to some extent, and some calcareous rocks and dolomite have also been described.

The mineral produce of the island is somewhat varied and of considerable value, and many of the minerals mentioned above are of considerable interest. Of the metals, iron and manganese abound, while several gems (cat's-eye, ruby, and sapphire), plumbago, salt, and nitre, are also important sources of profitable trade. There are several thermal mineral springs, considered valuable for medical purposes.

Some varieties of precious corundum of considerable value have been found in Ceylon, but Pegu is their chief locality. The Ceylon plumbago is soft, but remarkably pure. The salt exists in natural deposits, and is an important source of revenue. Nitre is found in caverns, and is widely distributed. Of the various minerals mentioned above, *Gadolinite* contains the rare earths yttria and glucina, and *Pyrochlore*, the equally rare substances, columbium, cerium, and thorium. *Cabook* is a reddish loam, resulting from the decomposition of clay ironstone.—D. T. A.]

GREY, The Countess.

A gilt sprinkler under a glass shade, from Ceylon.

ALBRECHT, GREENHILL, & Co.

Cinnamon and cinnamon oil.

Cocoa-nuts, from the South and West Province. Rice, general. Arrow-root, from the South Province. Manioca, from the West and South Province. Hill paddy, from the Central Province. Curugan, general. Maize, from the

South and Central Province. Millet and Tinne, from the same.

Coffee, from the Central Province, chiefly. Cardamoms, from the Four Korles, Galle.

Cinnamon, from the Western Province.

Tobacco, from Jaffna, Negombo, Tangalle. Ginger and nutmegs from the Western Province. Yams and sweet potatoes. Talipot leaves, from the Central Province.

Cocoa-nut sugar, from Batticaloa; Palmyra sugar, from Jaffna; Cane sugar, from the Western Province.

Manioca flour, from the West and South Province. Arrow-root flour, from the Southern Province. Sago, from the Northern Province. Vinegar.

Cotton, native, Bourbon and Sea Island; from Batticaloa and Jaffna.

Coir fibre, from the South and West Province.

Gamboge and tamarinds, from the West and East Province.

Areca nuts, from Four Korles.

[The areca nuts mentioned are yielded by a palm, and are highly esteemed by the natives of the East. They prove a not unimportant article of commerce, and one also employed, to a small extent, in the arts. But they are principally valued for a sort of inebriating property which they possess, and which is perceived in chewing them. Those who become addicted to this habit, which is almost universal, are passionately attached to the use of these nuts.—R. E.]

Copperah, from the East and West Province. (Copperah is the dried kernel of the cocoa-nut, which abounds in the South.)

Timber, general. Clearing Nut, from the North West and East Province.

Aloe fibre, cardamum, plantain, and hibiscus fibre, from Kandy and Colombo.

[The bark of several species of *Hibiscus* is so tenacious as to yield a serviceable material for textile purposes. For the manufacture of a coarse kind of cordage it is considerably employed, and the fibre is likewise used for making a coarse description of sacking. The *Hibiscus* belongs to the Malvaceous variety of plants.—R. E.]

Ivory and buffalo horns, from the North and East Province. Deer horns, from the Central and North Province.

Birds' nests, from Pasdoom Korle.

Honey and wax, from Bintenne.

Hides and hoofs, from Colombo.

Musk, from the Northern Province.

Chay, a root, or Indian madder, from the Northern Provinces.

Jack and malille, or halmalille woods, general.

Sappan wood, from the West, South, and East Provinces.

Turmeric and myrobolans, from the East Coast.

[The turmeric of commerce is yielded by a plant belonging to the natural order *Zingiberaceae*, and botanically called *Curcuma longa*. It is largely used in the preparation of various condiments, and also for dyeing. It has likewise medicinal properties. The analytical chemist is accustomed to prepare slight testings for alkalis by the aid of paper coloured with turmeric, the change of colour affording him the information he requires.—R. E.]

Pearls, Arcjso.

Chalks, from the Northern Province. Jaffna moss, from Calpentyn.

Sponges and cowries from Jaffna and Trincomalee.

Salt from Chelaw and Hambautotte.

Beche de mer, from the Northern Province.

[Beche de Mer is a radiated animal of the *Holothuria* tribe.]

Oils: cocoa nut, purified, cinnamon, clove, citron,

lemon grass, and cajeputi, from Colombo, Galle. Margoas oil, from Kandy. Croton and castor oils, from Colombo. Kekuna and gingelly oils, from Kandy. Citronella, meemel, and spearmint oils, from Galle. Mee oil, from Colombo.

Models of carriages and palanquins, from Colombo.

Chekoos, from the Western Province.

Looms; stills (medical), from the North, North West, and South Provinces.

Forges; smelting furnaces, from the Central and South Provinces.

Models of boats; guns; weapons, general, Kandy, &c.

Agricultural tools.

Cotton fabrics, plain and dyed, from the North, East, and South Provinces.

Cotton fabrics, painted, from Kandy.

Lace, from Galle.

Outlery, general.

Gold and silver ornaments, from Kandy, Jaffna, Galle, &c.

Crockery, plain and painted; and four toms, from Kandy and Matura.

Matting, from Kandy and Caltura.

Coir cordage, from the Southern Provinces. Coir webbing and bagging, from the Southern and Northern Provinces.

[Among the almost innumerable uses to which the cocoa-nut palm, *Cocos nucifera*, has been applied, that of yielding a fibre for the production of cordage is not the least important. This fibre, called *coir*, is obtained from the rind of the nut. It is manufactured, on an extensive scale, into cordage, webbing, bagging, &c., and possesses certain properties which practically fit it for this purpose. Being little acted on by water, and at the same time extremely tenacious, the rope made of it is valuable for maritime purposes. The fibre is too coarse for any of the finer textile purposes.—R. E.]

Aloe bagging, from Kandy. Hibiscus bagging, and cordage. Sanserira bagging, from Colombo.

[The Sanserira bagging is obtained from the fibre of a hibiaceous perennial plant, abundant in tropical Africa and India generally. The fibre is extremely tough, and answers for the manufacture of coarse materials, such as that described. Several other plants of the same order are found to yield a useful fibre for textile purposes.—R. E.]

Tortoiseshell and Chank ornaments, from Kandy, Matura, and Galle. Fishing lines and nets.

Baskets and boxes; quill, deer horn, buffalo horn, and straw, from Caltura and Galle.

Kandy painted baskets and boxes; umbrellas; punkahs, from Kandy.

Ornamented olas soap, from Kandy and Matura, Galle.

Carved work, ebony, from Galle and Caltura; ivory, from Four Korles; woods, from Galle and Caltura; steel, from the Central Provinces; cocoa-nut shells, from Galle; and egg shells, Kandy.

Models of Temples, from Colombo.

PARLETT, O'HALLORAN, & Co., Colombo.

Specimens of cinnamon, with essential oils extracted therefrom; with implements for cutting and peeling.

An ebony table, inlaid with fifty different woods; a fair specimen of Cingalese cabinet-work.

Model of coffee-works and apparatus used in Ceylon.

Model of patent stove and apparatus for curing coffee, by M. Clerihew, of Rathnagon.

Thirty specimens of medicinal oils, from T. A. Pieris, of Kandy.

Guns and resins from T. A. Pieris, of Kandy.

Forty specimens of ornamental and house-building timber.

Desk of porcupine quills. Ebony-carved flower vase.

Painted ivory fan-handle.

Buffalo horns mounted in silver.



For special information on the general characteristics of the contributions forwarded by different places coming under this head, reference will be made to the commencement of each. A short prefatory notice is intended to furnish a sketch in outline of these, and is attached to each separate catalogue. The dependencies included under this head are in numerical order—the Channel Islands, Malta, and the Ionian Islands.—R. E.

## CHANNEL ISLANDS.

NORTH SIDE, I. J. 30.

*Commissioners*—Captain W. WALBANKE CHILDERS, *Terrace House, St. Helier, Jersey*, and THOMAS CLUGAS, jun., Esq., *New Grand Terrace, Guernsey*.

THE Channel Islands, which are represented in the Exhibition by nearly fifty exhibitors from Jersey and Guernsey, have supplied an interesting and characteristic collection of articles in the various classes. The geological character of this group, which belongs to the primary rocks exclusively, is indicated by a collection in Class I. of the granites and other rocks of that series entering into the formation of the islands. These rocks are extensively quarried for building purposes, and the granite and syenite, particularly the latter, are highly valued and possess a fine grain. Several of the streets of the metropolis are paved with granite from these islands, and monuments have been erected from some of the finest varieties. The islands are remarkable as containing no fossil remains, nor any of the derivative rocks properly so considered. The fertility of the soil is indicated by a collection of wheats grown in Jersey, and arranged with considerable care; and the important element in the adaptation of the soil to the requirements of the farmer—manure—is also shown, and consists of the burnt and fused ashes of marine plants. These plants are called by the inhabitants "vraic," and are collected at stated periods. They contain, when burnt, a large proportion of iodine, and are useful as a manure from their other saline and earthy ingredients. Specimens of iodine obtained from vraic are exhibited. Specimens of silk reared in Guernsey are interesting, as suggesting attention to an important and probably ultimately a profitable direction for the employment of capital. Knitted articles of various kinds indicate the constant employment of the peasant women of these islands. A large sideboard of native oak, chiefly with carving repre-

senting the signing of Magna Charta, will receive notice. The natural history of the islands is represented by a collection of specimens of conchology. The shell-beaches of the beautiful island of Herm form the source of a great variety of species, and are the resort of every naturalist visiting these islands. The shells are formed into a number of ornamented articles, of which some are exhibited. The natural history of these islands is, in many respects, as in the case of other insulated spots, peculiar; but it is to the results of industry of some of the inhabitants that this Catalogue chiefly refers.—R. E.

### 1 WHITE, HENRY CAMPBELL, F.G.S., *Regent Road, Jersey*.

Geological specimens of the granites of Jersey, arranged by order of the local committee. Syenite from Mount Mado and La Brugne, St. John's Parish; St. Mary's, St. Breade, St. Clement, St. Aubin; Booley Bay, Trinity; and Verclut, St. Ouen; conglomerate, St. Catharine.

[The syenitic rocks, which are quarried chiefly at Mount St. Mado, in St. John's parish, Jersey, are commercially valuable. The other rocks, and particularly the conglomerate from St. Catherine's Bay, are interesting only to the naturalist and geologist. No traces of any metals, with the exception of iron, have been observed in Jersey, and the slates of the schistose rocks have not been used for economical purposes. The peculiar rigidity and wildness of outline of the rocks of the primary series is strikingly exemplified around the coast. Fantastic rocks of every form appear above the waters, and the steep cliffs of the northern shore are frequently hollowed into chasms and caverns. Notwithstanding the force and velocity of the tidal current around these islands, but little impression appears to be made upon them even by the roll of the Atlantic, the waves of which, when provoked by south-westerly winds, beat impetuously upon the coast.—R. E.]



2 LE COUTEUR, Col. JOHN, *Belle Vue, Jersey*—  
Producer.

Specimens and notes of produce of some of the most approved varieties of wheat cultivated in Great Britain, Jersey, &c., arranged by J. Le Couteur, F.R.S., M.S.A., Aide-de-Camp to Her Majesty the Queen.

White winter wheat.

*Var. No. 1. Triticum Hibernum Hybridum Candidum Epulonum Leucospermum of La Gasca, ex-Curator Royal, Gardens, Madrid.*

- |                                                                                                   |                                                         |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 1. Dantzic (Jersey). See grain. 52 imperial bushels to the acre.                                  | 10. Hardcastle.                                         |
| 2. Chidham. 1838.—18 lbs. of flour produced 26 lbs. 4 oz. of excellent white bread. Nature dry.   | 11. Old Essex.                                          |
| 3. Berkshire.                                                                                     | 12. Pegglesham.                                         |
| 4. Lewin's Eclipse.                                                                               | 13. Ten-rowed Prolific.                                 |
| 5. Clutton.                                                                                       | 14. Old Suffolk.                                        |
| 6. Whittington. 1841.—27 lbs. of flour produced 37 lbs. of good bread, rather brown. Keeps moist. | 15. Earl Toham.                                         |
| 7. Brown Chevalier. 27 lbs. produced 36 lbs. 14 oz. excellent white bread.                        | 16. White Dantzic, Lincoln.                             |
| 8. Canada.                                                                                        | 17. Old Lammis Prize, Devon.                            |
| 9. Burrill, from Earl Spencer. 1842.—27 lbs. of flour produced 36 lbs. white bread.               | 18. Dantzic, Oxford.                                    |
|                                                                                                   | 19. Old Welsh white Lemon.                              |
|                                                                                                   | 20. Mullybrack, Norfolk.                                |
|                                                                                                   | 21. Pearl, Scotland.                                    |
|                                                                                                   | 22. French.                                             |
|                                                                                                   | 23. London Superior.                                    |
|                                                                                                   | 24. Royal Standard.                                     |
|                                                                                                   | 25. Baltic. 18 lbs. of flour produced 23 lbs. of bread. |
|                                                                                                   | 26. Kentish long.                                       |

Winter compact varieties (Fr. *Froments carrés*; Ger. *Vierzeilige Weizen*).

*Var. No. 2. Trit. Hib. Album Densum, of La Gasca.*

- |                                                                                                               |                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Jersey Pearl. 48 bushels to the acre. 18 lbs. of flour produced 24 lbs. of bread, white, dry nature. 1837. | 8. Chili. 1848.—27 lbs. of flour produced 34 lbs. 12 oz. brown heavy bread. Condemned, after seven years of trial, though suited to the stormy regions of the mountains of Chili. |
| 2. Ducksbill, Kiel. 1836.—18 lbs of flour produced 24 lbs. of bread, rather moist.                            | 9. Cape of Good Hope.                                                                                                                                                             |
| 3. Britannia.                                                                                                 | 10. Coturianum Compactum, La Gasca. 58 bushels to the acre. 27 lbs. of flour produced 36 lbs. 2 ozs. white bread, of a moist nature.                                              |
| 4. Buckland Toussaint, Devon.                                                                                 |                                                                                                                                                                                   |
| 5. Suffolk Thickset.                                                                                          |                                                                                                                                                                                   |
| 6. Mazzochino, Italy.                                                                                         |                                                                                                                                                                                   |
| 7. Buff Surrey.                                                                                               |                                                                                                                                                                                   |

*Var. No. 3. Elongated winter wheat (Fr. *Froments allongés*; Ger. *Weizen Verlangen*).*

Trit. Hib. Candidissimum Epulonum of La Gasca.

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|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1. Dantzic, Jersey. See Grain, High-mixed, of commerce. 27 lbs. of flour produced 35½ lbs. of excellent white bread. | 5. Lupo, Italy.                                                                                               |
| 2. Cape of Good Hope, longest.                                                                                       | 6. Gran Gentil et Rosso. This seed was seven years in the hands of the late Secretary of the Society of Arts. |
| 3. Cape of Good Hope. 1840.—27 lbs. of flour produced 37 lbs. 8 ozs. of white moist bread.                           | 7. Van Diemen's Land.                                                                                         |
| 4. Malaga.                                                                                                           | 8. Crim Tartary.                                                                                              |
|                                                                                                                      | 9. Var. High-mixed, Dantzic.                                                                                  |

*Var. No. 4. Downy, or hoary wheat (Fr. *Veloutés*; Ger. *Wolligweizen*).*

Trit. Hib. Koeleri of La Gasca.

- |                                                                                                                        |                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1. Kentish Downy. See Grain, B. V. 55 bushels to the acre. 18 lbs. flour produced 26 lbs. of bread, excellent quality. | 7. Coturianum Confertum of La Gasca.                                                                                        |
| 2. Guinea, Norfolk.                                                                                                    | 8. Red-grained.                                                                                                             |
| 3. Turgidum.                                                                                                           | 9. Chili, 1850—to be tried.                                                                                                 |
| 4. Imperial Buff.                                                                                                      | 10. Jersey, 20 lbs. 6 ozs. of this flour, and 6 lbs. 10 ozs. of bran, produced 39 lbs. 1 oz. of good bread, second quality. |
| 5. Tunstall rough chaff.                                                                                               |                                                                                                                             |
| 6. Italian.                                                                                                            |                                                                                                                             |

*Var. No. 5. Red wheats (Fr. *Froments Rouges*; Ger. *Rath Weizen*). Trit. Hib. Glabrum Rufum of La Gasca.*

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|----------------------------|--------------------------------------------------------------------------------------------------------|
| 1. Golden Drop. See Grain. | 15. Essex.                                                                                             |
| 2. Red Hair Welsh.         | 16. Prolific.                                                                                          |
| 3. Rattling Jack.          | 17. Sark, very hardy.                                                                                  |
| 4. Old Red Norfolk.        | 18. White Golden Drop.                                                                                 |
| 5. New Red Norfolk.        | 19. Gigantic.                                                                                          |
| 6. Old Red Lammis.         | 20. Grand Rubella.                                                                                     |
| 7. Britannia.              | 21. Compact Red.                                                                                       |
| 8. Red Chaff Dantzic.      | 22. Kiel.                                                                                              |
| 9. Blood-red Scotch.       | 23. Cape of Good Hope. 1840.—18 lbs. of flour produced 26 lbs. 6 ozs. of brown bread, of a dry nature. |
| 10. Syer's.                | 24. Pale red Cape.                                                                                     |
| 11. York Square-headed.    |                                                                                                        |
| 12. Copdock.               |                                                                                                        |
| 13. Golden Prolific.       |                                                                                                        |
| 14. Red Burrill.           |                                                                                                        |

*Var. No. 6. Spring wheats (Fr. *Bleds de Mars Trémois*;*

*Ger. Springen Weizen*). *Triticum Æstivum Candidum Epulonum of La Gasca. Beardless (Sans barbes).*

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Belle Vue Talavera (Col. Le Couteur's Seedling). See Grain. 1838.—52 bushels to the acre. 1841.—27 lbs. of flour produced 35 lbs. 14 ozs. bread of the finest quality. | 5. Cape White. 1840.—27 lbs. flour produced 37½ lbs. white moist bread.                                                                                                                             |
| 2. Old proved Talavera, Spain.                                                                                                                                            | 6. Mummy. Tombs of the Kings of Thebes. Sir Gardner Wilkinson. Raised at Belle Vue, from one ear, sent by M. Tupper, Esq., 1846.—27 lbs. flour produced 35 lbs. bread. Very light, white, superior. |
| 3. Malaga.                                                                                                                                                                |                                                                                                                                                                                                     |
| 4. Italian.                                                                                                                                                               |                                                                                                                                                                                                     |

*Var. No. 7. Bearded (Fr. *Bleds-trémois barbus*; Ger. *Bartweizen*).*

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|---------------------------------------------------------------------------------------------------|----------------------------------|
| 1. White Lily (Jersey). See Grain. 27 lbs. flour produced 38½ lbs. bread. Moist, white, superior. | 8. Old Red-hair Welsh.           |
| 2. Horned Red grain, Lincoln.                                                                     | 9. Rivets.                       |
| 3. Brittany.                                                                                      | 10. Coetho, Brittany, elongated. |
| 4. April.                                                                                         | 11. Coetho, " compact.           |
| 5. Arthur's Jersey (hardy, and productive on poor soils).                                         | 12. Spanish.                     |
| 6. Black-jointed. 1841.—27 lbs. flour produced 37 lbs. of good bread.                             | 13. Victoria, Caraccas.          |
| 7. Old White-hair Welsh.                                                                          | 14. Kubanka of commerce.         |
|                                                                                                   | 15. Cape of Good Hope.           |
|                                                                                                   | 16. Italian Red.                 |
|                                                                                                   | 17. Kiel, Baltic.                |
|                                                                                                   | 18. Italy.                       |
|                                                                                                   | 19. Egyptian.                    |

Total, 104 specimens.

*Comparison and Result.*

The Kentish or Jersey Downy Wheat:—In 1847, one quarter, or 463½ lbs., produced 351½ lbs. of flour, which produced 482½ lbs. of bread.

Baltic or Rostock Wheat:—In 1847, 454 lbs. of wheat produced 312 lbs. of flour, which produced 398½ lbs. of bread.

Downy, 482½ lbs.

Rostock, 398½ "

or 84 lbs. excess over the Rostock on one quarter; or excess over one acre, at 6 qrs. to the acre, 504 lbs. of bread—the supply of one person for a year. The excess over some inferior varieties, as to quantity of produce and yield of flour, being far greater.

Those varieties, to which explanations have been given, have all been tried by the exhibitor at Belle Vue.

[The agricultural productions of Jersey are wheat, barley, and oats: parsnips are grown; and potatoes for exportation are extensively and increasingly cultivated. For a series of years the present exhibitor has been occupied in classifying and arranging the varieties of wheat; and the facts developed by his experiments appear to give a high degree of fertility of soil to that of Jersey over the soil of other places. The uniformly mild and genial temperature of these islands generally forms undoubtedly a great element in the success which attends the labours of the agriculturist, and particularly of the horticulturist and florist.—R. E.]

3 DUNLEVIE, Mrs., *Belmont Place.*

A richly knit silk purse: worked by a lady 83 years of age.

4 BERLAND, J., *Great Union Road.*

A machine to stop railway carriages instantaneously.

5 LE MOYNE, HENRY, *St. Helier, Jersey*—Inventor.

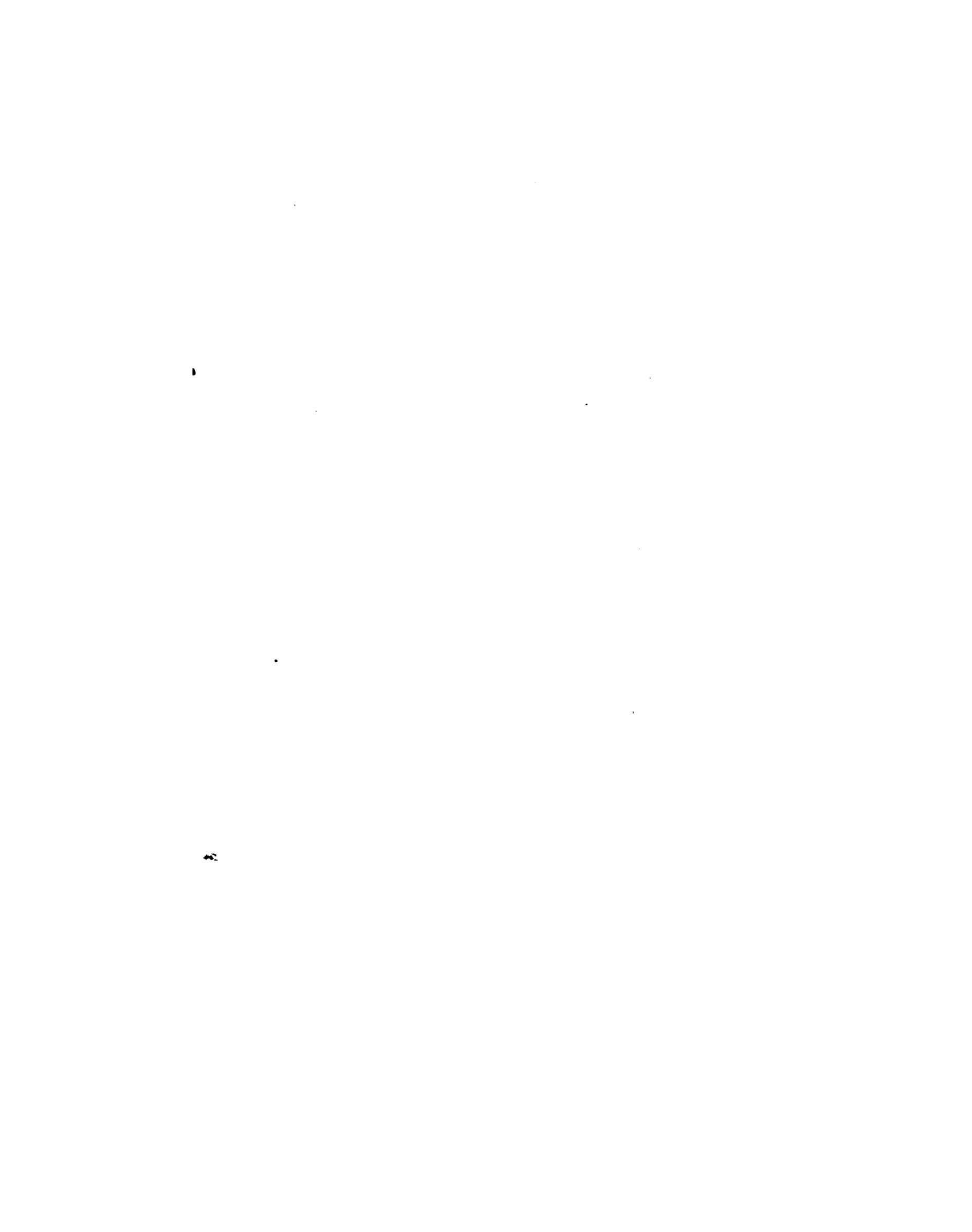
Diagrams to elucidate the method of trisecting any angle. These diagrams are the exhibitor's invention.

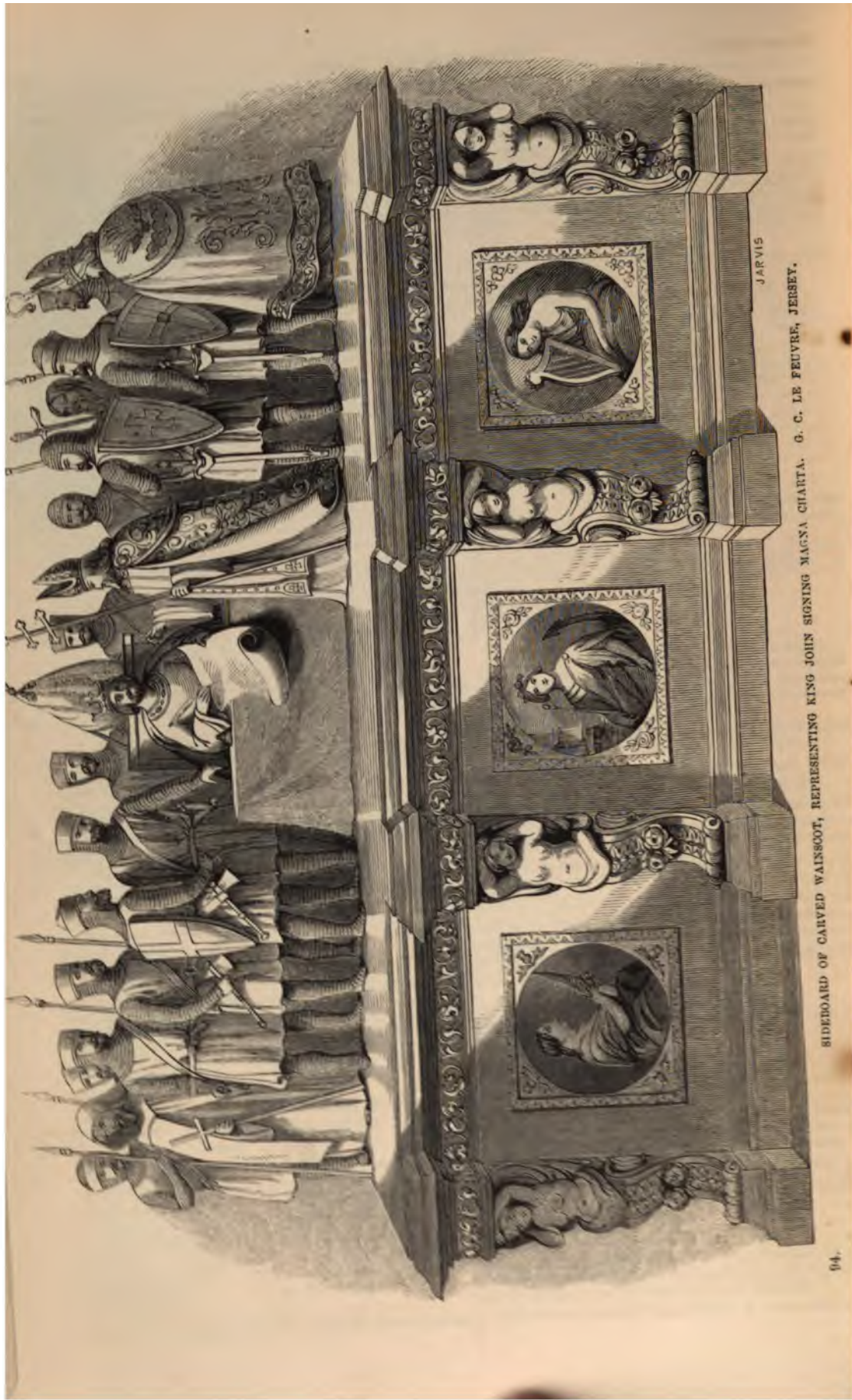
[The trisection of an angle by plane geometry is a problem as impossible as the quadrature or rectification of the circle.—R. W.]

6 CHEVALIER, JOHN, *Don Street*—Inventor.

Model of a swinging beacon, for the prevention of shipwrecks, by marking the situation of rocks. Not liable to be damaged, or carried away by sea or shipping.

[The sea all around these islands is beset with rocks





JARVIS  
SIDEBOARD OF CARVED WAINSCOT, REPRESENTING KING JOHN SIGNING MAGNA CHARTA. G. C. LE FEUVRE, JERSEY.

upon which fearful shipwrecks have taken place, attended with great loss of life. Beacons of various kinds are placed upon them; but these are often of little avail, in consequence of the dense fogs which at times fill the Channel. An exhibitor in a preceding Class has recommended the adoption on some of these rocks of a lighthouse of brass, the dome of which might be converted into a great bell, which might be struck during thick weather.—R. E.]

7 DE LA CONDE, M., *Broad Street*—Manufacturer.

Specimens of artificial teeth, of novel construction, and with double hinges.

8 FELTHAM, R. D., 1 *Oxford Place, St. Marks, Jersey*—Inventor.

Spring skeleton regulator; will go without winding-up for 500 days: its peculiar novelty consists in the adaptation of a pendulum making but one complete vibration in sixteen seconds, with detached escapement; its execution is considered to be superior, from the combination of its motive power.

[The direction of the going of a clock without winding depends principally upon the increase of the weight employed to move it. By the introduction of several wheels, and the employment of a proportionate power in the weight or springs, the ordinary going period may be greatly prolonged; ordinarily, advantage is found from the less occasional necessity for winding up.—R. E.]

9 DUPRÉ, W. H., *Charing Cross, Jersey*—Inventor.

Defiance wind guard, for the prevention of down-draught, or the descent of smoke in chimneys. The outer pipes surrounding the stem are formed in a spiral direction from the base to the top.—Patented.

Another for the same purpose, adapted for any situation, whether surrounded by hills, or tall buildings.

Roof light of glass, in a zinc case; it allows ventilation and light, without leakage.

10 LE FEUVRE, PHILIP, *St. Clement Academy*—Inventor.

Orrery, for school use. This orrery shows the moon's motion round the earth, her daily variations, her position at the time of new and full moon; also, the cause of eclipses, and whether partial or total: the phases of the moon are indicated by cones constructed of pasteboard attached to the earth and moon.

11 LE FEUVRE, MRS. F., *Edward Place*—Producer.

A fire-screen, worked in tapestry by the exhibitor.

12 WHITE, GEORGE, *St. Mark School, Jersey*—Proprietor.

Class box and illustration board, to exhibit writing, &c., to a class in a school, used as a seat and box for books.

Door governor: to prevent violent shutting.

Chimney-pots or ventilators; to prevent "down-draught," by hills or buildings, having the advantages of an open chimney-pot combined with a covered one. "Down-draught" caused by adjacent obstructions made to assist the upward draft by confluence with it.—Registered.

Illuminated clock: to show the hour after dark by light transmitted from a central chamber to the interior of the pointers, which, having transparent fronts, show luminous lines on the darkened dial; the figures are also lighted from the same chamber.

Pump and blower, for the conveyance of water or air. The general arrangement for giving motion is by centrifugal force.

13 BROHIER, HENRY, *New Street, Jersey*—Proprietor.

Specimens of Jersey knitting, by an old lady; viz.—knitted garment, commonly known as "Guernsey frock," of white worsted. Pair of drawers, also knitted, of coarse grey worsted, undyed.

14 DE FAYE, THOMAS, *Scale Street, Jersey*—Proprietor.

Twelve pairs of beautifully knit stockings. Knitting peculiar to the island; fine woollen thread, dyed of different colours.

[The female peasantry of Jersey are seldom if ever without the materials necessary for this occupation. On the way to or from market, and at other times, knitting forms their almost constant employment; and the articles produced have a peculiar character, which renders them readily recognisable.]

15 VIBERT, SUSANNA, *St. Mary, Jersey*—Manufacturer.

A pair of knit stockings, the work of the exhibitor, aged 71 years; the peculiar manufacture of Jersey.

16 MARIE, MARY, *King Street*—Manufacturer.

Richly knitted silk jacket, in blue and white stripes, having on the breast the Prince of Wales' feather, and under it the words "Albert Prince de Galles." Knitted entirely by the exhibitor, who is a shoebinder; it contains upwards of one million stitches.

17 SCARFE, GEORGE, *Beresford Street*—Proprietor.

Chaise harness, elegantly fitted with silver ornaments, and elaborately finished and embossed.

18 CARMALT, JOHN, *David Place*—Manufacturer.

A pair of scissors and a knife, so diminutive in size that the two do not weigh a grain.

19 JOUHAUD, PETER, *Peter Street*—Inventor and Manufacturer.

Carriage-gun: takes readily to pieces, and can be used as a rifle, a fowling-piece, or a pistol; cannot be discharged by accident, having a secret spring; is embossed and inlaid with gold and silver. The lock is of a peculiar construction; the stock is finely carved.

20 LE FEUVRE, GEORGE CLEMENT, *Edward Place*—Manufacturer.

Chiffonnière, composed of oak, a portion the produce of the island of Jersey; the inside fittings of satin-wood; the panels tapestry. There are three compartments, cabinet, secretary, and boudoir, the latter containing a nest of drawers. The ebony and satin-wood fittings are beautifully finished. The panels represent the emblems of England, Scotland, and Ireland in tapestry, the work of the exhibitor's wife, divided by carved columns, with figures surmounted by wrought frieze. The back represents, in carved work, King John signing the Magna Charta. The accompanying Plate 94 represents this sideboard.

21 STEAD, WILLIAM, *Hill Street*—Manufacturer.

A piece of furniture, applicable as a celleret or font; the bowl, cut out of solid mahogany, is finely carved, and supported on three claw-feet; the top is movable by ropes and pulleys, running in circular boxes forming the pillars or supports for the crown by which it is surmounted, and resting on the edge of the bowl on three worked lions' heads.

22 COLLIE WILLIAM, *Belmont House, St. Helier, Jersey*—Producer.

Calotype pictures from life—"French and Jersey Market-women."

[Preceding notes, in Classes of the United Kingdom, have explained the use of this term calotype—originally a

derivative from the Greek. It is now generally superseded by that of Talbotype, implying the name of the inventor of the art of photography on paper. The peculiar brilliancy of the atmosphere of these islands, combined with the abundance of blue light reflected from the sea, was found by the writer to communicate an almost instantaneous impression to paper or plates.—R. E.]

23 SAUNDERS, GEORGE, *Bath Street, Jersey*—Producer.

A model in paper, representing Her Majesty landing at Victoria Pier, Jersey, 3rd September, 1846.

[The Victoria Pier at Jersey is only just approaching its completion, and has absorbed a large amount of time and money. It is protected by Elizabeth Castle on the northern side, and covered by the guns of the fortress which commands the town.—R. E.]

24 SIMON, Miss, *Elizabeth Place*—Proprietor.

Basket-work, in paper; an heirloom from her progenitor, Madame Mauger, in 1728.

25 CLUGAS, THOMAS, jun., *8 L'Hyvresse Terrace, Guernsey*—Proprietor.

Specimens of granite, porphyry, and pot-stone, from the islands of Guernsey, Herm, and Sark:—

1. Porphyritic gneiss, from Pleinmont Cliffs.
2. Red porphyritic gneiss, from the same.
3. Black hornblende, from les Teilles.
4. Hornblende schist, from Castel au Roc.
5. Red Syenite, from Roc de Guet.
6. Grey Syenite, from Mont Cuet.
7. Blue Syenite, from the Vale quarries.
8. Grey Syenite, from the island of Herm.
9. Porphyry (black), from the island of Sark.
10. Steatite, from the same island.

Curved specimens.

The above are used for building and macadamizing. Herm syenite was used for the steps of the Duke of York's Column, in Waterloo-place.

[The rocks of Guernsey are principally gneiss, granite, and syenite. Quarries of syenite exist at Grande Roque; but this syenite is not considered equal to that of Mount St. Mado, in Jersey. At St. Sampson's are some extensive quarries of granite, which are worked for paving-stones; and of these considerable quantities are sent to London and Portsmouth. Experiments made as to the comparative durability of this granite and other granites, give a result highly favourable to its employment. It has been successfully laid down in the heaviest thoroughfare in the metropolis. Quarries formerly existed at the island of Herm, but are now abandoned. In the same island, and in Sark, are several mines, which formerly yielded copper and silver in considerable quantities; but these are now no longer worked.—R. E.]

26 MARTIN, PETER, *St. Peter's Port, Guernsey*—Producer.

Raw silk, the produce of the Island of Guernsey, being the first sample obtained by the Guernsey Silk Growers' Company, lately established in the island.

Arrowroot fecula, obtained from the *Arum maculatum*, a plant indigenous to Guernsey.

[Experiments have been repeatedly made in England to introduce the culture of the silkworm. The late Mrs. Whitby was very successful in this art, and laboured much to establish it in this country: her experiments show that the mulberry of the Philippine variety, *Morus multicaulis*, is best adapted for their food. The culture of this insect, and the introduction of this tree into the Channel Islands, would very probably be attended with a large success if carefully carried out. The almost total

absence of frost in winter is sufficient to indicate the great mildness of the climate.—R. E.]

27 ALLÉOND, EMANUEL, *St. Peter's Port, Guernsey*—Inventor.

Model of a machine to determine the distance run by a ship, and at the same time to determine the ship's place on the chart.

28 HARRIS, PETER GEORGE—Inventor.

A corking machine: improved application of the lever in driving the cork through a cone, the bottle being secured by another lever at the foot.

29 MACDONALD, SOPHIA, *Woodland*—Inventor, Designer, and Manufacturer.

Tulle dress, embroidered with groups of floss silk flowers, copied from natural flowers. The novelty consists in the firmness given to the floss silk flowers on so slight a texture as tulle.

30 DOBREE, HARRIET, *De Beauvoir*—Designer and Inventor.

Table-top, ornamented with shells found in the Island of Herm.

Group of poultry made of shells.

[On the western and northern shores of the island of Herm there exist interesting shell-beaches, which afford a rich study to the conchologist. It is remarkable that on this small island, of the entire group, is this collection of shells chiefly found. They are principally of a minute, and often almost microscopic size; but their numbers are inconceivable.—R. E.]

31 HUTCHINSON, ELIZABETH, *Queen's Road*—Designer, Inventor, and Manufacturer.

Vases, with shell flowers.

Octagon table slabs in rosewood cases, with groups and wreaths of shell flowers.

32 SARCHET, JOHN, *Victoria Road*—Inventor.

Model of a machine for welding chain cable and other links, the first invented; saving labour, and of importance for ship cables.

33 ARNOLD, ADOLPHUS, *11 Commercial Arcade, Guernsey*—Manufacturer.

Specimens illustrating the manufacture of iodine and iodide of potassium.

Specimens of the fuci and algæ which grow abundantly on the north and west coasts of the island of Guernsey.

Fused mass, consisting of the ashes of these marine plants, and containing salts of soda, potash, lime, and magnesia. The quantity of iodine in this material bearing a direct ratio to the quantity of potash contained therein, it is presumed to exist as iodide of potassium.

Iodine in the rough state, as produced in the first receiver connected with the distillatory apparatus, and containing bromine and chlorine in small proportions.

Commercial iodine, prepared by steam distillation, pure, dry, of brilliant metallic appearance, and free from bromine. Used in medicine and the arts for dyeing.

Crystals of iodide of potassium, prepared from the preceding.

Residuary product, consisting of the ashes of the fuci and algæ, after the iodine has been extracted, and containing the salts of potash, soda, lime, and magnesia, as chlorides and sulphates. Used as a manure by the farmers.

[The collection of the fuci and algæ which abound in the northern, western, and south-western shores of Guernsey, is considered of great importance by the island agriculturist. The "vraie" is gathered at spring tides, and the event is one of peculiar interest, in consequence of the

crowds of people employed in cutting, carting, and removing the marine plants. *Vraic* is distinguished into the cut and the floating sorts; the former is most highly valued, and the gathering of them is protected by law. Between 25,000 and 30,000 cart-loads are collected on the shores yearly. The precipitous southern coast does not present a favourable site for the growth or collection of these plants. In summer-time the fields are often covered with beds of sea-weed spread out to dry: it is afterwards used as a fuel in winter, and the ashes, carefully collected, are sold for manure, and are considered so essential to the soil, that it is a proverbial expression, "if there be no vraic, there will be no corn." The fused mass of ashes contains various salts, and appears particularly rich in iodine.—R. E.]

34 GOULD, THOMAS—Manufacturer.

Salts, similar to those commonly called "Epsom," produced from salt or chloride of sodium.

[Epsom salts consist chemically of a sulphate of magnesia. The preparation exhibited appears to be sulphate of soda in a crystalline form, since it is obtained by the decomposition of choride of sodium.—R. E.]

35 DOBREE, D., *Forest Rectory, Guernsey*—Proprietor.

Original Guernsey frock, of Guernsey home knitting, in constant use among labourers and fishermen; worn over the shirt.

Frock of Guernsey wool and Guernsey home knitting, used instead of flannel.

Drawers, men's and women's stockings, nightcaps, gloves, fishermen and labourers' cravats, and slippers of Guernsey home knitting.

36 LE BEIR, N., *St. Peter's Port, Guernsey*—Proprietor.

Guernsey farm saddle: local name of material "han," in constant use on every farm for riding, and for carrying bags and panniers. Mat and footstool of "han," in common use. Bullock's and horse's collar of "han." Coil of "han" rope, used by fishermen: this does not harden in the salt water. Shackles of "han," used for cattle; these do not cut the feet. "Han,"—a bank of the raw material, common in Guernsey; it grows in the meadows.

["Han," or, in botanical language, *Cyperus longus*, is employed by the peasantry of Guernsey for a variety of purposes, for which hemp is elsewhere used. The fibre has a certain degree of tenacity, and is twisted and formed into ropes, mats, &c. Cattle are constantly tethered by a rope of this material.—R. E.]

37 DOBEY, D., *St. Mary de Castro, Guernsey*—Proprietor.

Guernsey osier crab-pot; to be sunk in deep water, baited inside, to catch lobsters, conger, &c. Osier fish-basket. Large osier bait-pot, intended for a few days' consumption, left at sea to keep the bait alive. Small bait-pot, for one day's use, towed after the boat.

[The fishery around both Guernsey and Jersey is excellent, and the markets are well supplied. The conger eel is caught of a very large size, and is much employed in the domestic cookery of the islands. At Jersey an important oyster-fishery exists, from which large quantities of oysters are sent to Southampton and to other places.—R. E.]

38 Guernsey home-knitting work by cottagers.

39 GOODRIDGE, J., jun. (of the "Channel Islands Express" steamer)—Inventor.  
Model of a life-boat.

40 VALPY, Mrs., *King Street, St. Helier, Jersey*—Producer.

Specimens of conchology of Jersey, collected, classified prepared, and arranged by the exhibitor during a twenty-two years' residence in Jersey.

[One of the most interesting members of this conchological series is the *Aumer*, or *Oreille de mer*, a shell-fish which is collected abundantly at certain seasons. It is used in a variety of ways for food, and the shell is preserved, and exported to England; it is valued for its pearly iridescence, and is largely used at Birmingham by the makers of inlaid papier maché.—R. E.]

Leather frame. Large knitted quilt.

41 BERTRAMS, Mrs., *St. Helier, Jersey*—Manufacturer.  
Pair of socks, knit without glasses by the exhibitor, aged ninety-three.

42 MARQUARD, P., Blacksmith, *North Pier*—Inventor and Producer.

Model of a patent truss for the yards of ships, of Muntz metal.

43 POPE, Mrs., *Halket Place, St. Helier, Jersey*—Manufacturer.

Various descriptions of confectionery in sugar, manufactured by exhibitor.

44 ELLIS, Miss—Proprietor.

Specimens of fine workmanship in leather, shown in a pier-glass framé and stand, with brackets.

45 DRAKE, FRANCIS—Inventor.

Model of collapsing life-boat.

46 RANDELL, Miss, *Guernsey*—Producer.

Two mats worked in wool.

47 LETAUREL, J. H.—Producer.

Acts of the Martyrs, in French.

48 MANUEL, H. L., *Jersey*—Producer.

Two pairs of Newfoundland fishing boots.

49 STAFFORD, MRS. B. A., *Guernsey*—Producer.

Stand of wax fruit.

MEDITERRANEAN.

MALTA.

NORTH AREAS, I. J. 32.

(Commissioner, C. J. GINGELL, Esq., of Valetta, and 66 Cornhill, London.)

FROM Malta has been forwarded, by about thirty-four exhibitors, a collection of interesting objects representative of its local manufactures. The only specimens of raw material sent are some pieces of Maltese stone, oiled for pavement, and in their natural state, and some specimens of cotton and silk of native production. In addition to these are a few samples of seeds and wheat. The nankeen cotton cloth of Malta has been

sent by several exhibitors. Some elaborate specimens of embroidery are also among these articles. A very attractive collection is that of the jewellery and other articles in gold and silver filigree. The chaste and delicate appearance of these objects is extremely pleasing. A prominent part in the collection is formed by the stone vases, some of which exhibit skilful execution and tasteful design. The figures in wax will likewise attract notice. These articles are placed next to those of India, on the North side of the Western Nave.

- 1 TONNA, JOSEPH, *Strada Forni, Valletta*—Manufacturer.  
Double-bass fiddle, made of bird's-eye maple.
- 2 BONAVIA, CNORATO, *Casal Nazaro*—Producer.  
Specimens of cotton sail-cloths of four, five, six, and seven threads of different lengths.  
Specimens of chequered cotton cloth for carpeting.
- 3 SCHEMBRI, G., *Valletta*—Manufacturer.  
Cotton tissues :—  
Pieces of natural Malta nankeen, white, narrow, and wide squares. Piece of light colour, and damasked square.
- 4 PULIS, G. MONTEBELLO.  
Cotton fabrics :— Piece of natural nankeen, plain. Piece of nankeen, striped with Malta raw silk. Piece of superfine plain nankeen.  
Sample of common Maltese cotton. Common Maltese nankeen cotton. Indian nankeen cotton. Sea-island cotton. Mastodon American cotton.  
Sample of cummin seed. Aniseed. Sesame seed.  
Sample of Maltese hard wheat (called *Tomnia*). Soft wheat.  
Samples of cotton thread, from four kinds of cotton. Cotton thread, from common Maltese cotton. Maltese cotton.  
Sample of Maltese silk and cocoons.  
[After prolonged and patient labour the soil of Malta has been made to yield its fruits to the husbandman, and abundant crops are obtained. Among these cotton forms the most important. About four million pounds of this fibre are exported yearly.—R. E.]
- 5 VILLA, FRATELLI, *Strada Mercanti, Valletta*—Manufacturer.  
Cotton fabrics :—  
White and red cotton blankets ; figured counterpanes. An assortment of straw hats.
- 6 FENECH, VINCENZO, *Floriana*—Producer.  
Specimen of Maltese bookbinding, two volumes.  
Collection of ancient and modern costumes of Malta.
- 7 GRAVAGNA, MARIA, *Valletta*—Producer.  
Several pieces of broad lace.
- 8 NAUDI, Signora ROSINA, *Valletta*—Producer.  
Velvet bags embroidered ; plain embroidered muslin dress ; plain embroidered baby's dress.  
Toilet cover (lace, Greek style) ; embroidered handkerchief ; various specimens of lace.  
Various pairs of mittens.
- 9 ENRIQUEZ, Signora MARIA, *Valletta*—Producer.  
Variety of black silk mittens.  
Habit shirts, plain embroidered.
- 10 SCHEMBRI, ANTONIA, *Valletta*—Producer.  
Specimens of lace with gold thread.  
Collars. Two lace collars.
- 11 GOZO, SALVO DEL—Producer.  
Specimens of black silk lace.
- 12 CASHA, COSTANZA, *Valletta*—Producer.  
Piece of lace of Greek pattern.
- 13 POLITO, CANONICO, *Vittoriosa*—Producer.  
Specimen of lace (Greek pattern).
- 14 CAMILLERI, E., *Valletta*—Producer.  
Specimen of broad lace, with pieces for sleeves for clerical dress. Various specimens of lace.
- 15 VELLA, PAOLO, & Co., *Valletta*—Producer.  
Specimen of lace.
- 16 CAMILLERI, FORTUNATA, *Valletta*—Producer.  
Specimen of lace.
- 17 GRECH, GIUSEPPINA, *Valletta*—Producer.  
Baby's plain embroidered muslin dress.
- 18 LAGRESTIZ, Signora ELENA NUZZO, *Valletta*—Producer.  
Sample of embroidery with silks : top of a pincushion.
- 19 FENECH, ANTONIA—Producer.  
Paper envelopes, embroidered with silks and gold.
- 20 AZZOPARDI, JOSEPH MOORE—Producer.  
Pair of mittens, with beads.
- 21 DIMECH, Mrs.—Producer.  
Various specimens of long and short mittens. Long mittens with beads.  
Sample of lace. A breadth of black tulle, embroidered. Black lace. Flounce and breadth of broad lace. Numerous specimens of lace. Collar and two cuffs.  
Maltese nankeen dress, embroidered with wool. Maltese nankeen girl's dress, embroidered with silk. Two pieces of Maltese nankeen.
- 22 THE CONSERVATORIO OF SAN GIUSEPPE—Producer.  
Knitted collars ; knitted fronts of habit shirts.  
Specimens of knitted broad and narrow lace ; knitted caps ; knitted thread stockings.
- 23 PORTELLI, ANTONIO, *Strada Stella, Valletta*—Producer.  
Silver filigree reticule.
- 24 CRITEIN, E., *Strada Forni, Valletta*—Manufacturer.  
Specimens of gold filigree work :—Bracelets ; rose-chain bracelets. Knot brooches. Double pin for hair. Rose-chains. Flat and rose rings, &c.  
Articles in silver filigree :—Basin. Oval plates, with flowers. Round plates. Card cases. Candlesticks. Teaspoons. Cups. Wreath for the head. Bead bracelets. Large double pin. Small double pins. An arrow for the hair. Bouquet-holder brooches. Stars to suspend. Knot, tie, and shawl brooches. Rose-chain, &c.







56.

MALTESE STONE VASE.

Gold articles :—Gold rose-chain for waistcoat. Broad flat rings.

[The peculiar art of the filigree-worker, originating in Italy, is carried on with success at Valletta, one of the principal towns in Malta. The delicacy of this description of work and the beauty of the articles produced have long rendered it valuable among the admirers of jewellery.]

25 FALSON, S., *Strada Reale, Valletta*—  
Manufacturer.

Articles in gold :—Maltese rose-chain. Bracelets: with scales; cameo; coral; oriental cameo, &c. Brooches: with bunch of flowers; in the form of a knot; and with a rose and flowers. Chain: imitation of Venice work. Large-sized pins. Bracelet, lace pattern. Pair of hair-pins. Various pins: with coral; mosaic work; cameo, &c. Shirt-studs. Chain rings. Rose-chain rings. Small rose-chain necklace, &c.

Ornaments in silver :—Filigree flower-stands. Flower ornaments for the hair. Hair-pins. Plates, and small cups. Bead bracelets; rose bracelets; and bracelets of Gothic pattern; rose-chain bracelets. Breast-pins, and chatelaines. Arrows for the hair. Large and small flowers. Shawl-pins and pincushions. Pins for necklaces, &c. Money-bag, and card cases. Bead buttons, various sizes. Butterfly of gold and silver. Pins in the form of a cornucopia. Small pins.

26 DARMANIN, JOSEPH, & SONS, *Strada Levante, Valletta*—Manufacturer.

Inlaid marble table-top, with the Royal arms, 4 feet long, 3 feet broad.

Inlaid marble table-top, with fancy scroll, &c., in the centre, 3 feet square.

Inlaid marble table-top, with Etruscan vase in the centre, 2 feet 6 inches in diameter.

Inlaid marble table-top, with the emblem of Carthage in the centre, 2 feet 2 inches in diameter.

Pieces of Malta stone, oiled and prepared for pavement. Drip-stone of Malta stone. Specimens of Malta and Gozo stone, and stalactite.

Vase, with pedestal of red Gozo marble. Wax and cloth figures.

[Malta and Gozo consist of stratified deposits, chiefly or entirely of the middle part of the tertiary period. They include, in descending order—1. A coral limestone, containing cretaceous nodules, some of which are variegated with yellow and white, and used for ornamental work, under the name of Gozo marble. 2. A sandstone and blue clay, from 100 to 150 feet thick, containing iron, gypsum, and sulphur. 3. Five beds of freestone, about 100 feet thick in all, and chiefly calcareous, though with much sandy admixture: these are much used for building purposes, not only in Malta and Gozo, but in all parts of the Mediterranean, the lowest bed being the most available, on account of the facility with which it is worked. 4. A yellowish-white semi-crystalline limestone, of very considerable but unascertained thickness, exposed to the extent of 400 feet on the coast of Gozo, and much used for building purposes where hardness is required. Some of the valleys of Malta and Gozo are picturesque and fertile where the blue clay (2) allows the water to be retained, and thus originates springs.—D. T. A.]

27 DECESARE, P. PAOLO, *Strada San Giovanni, Valletta*—Carver.

Large vases, 5 feet 2 inches in height, and 2 feet 10 inches in breadth. One of these vases is represented in the adjoining column. (Fig. 1.)

Small jugs, 1 foot 6 inches in height, and 1 foot 2 inches

Fig. 1.



Decesare's Stone Vase.

in breadth. One of these jugs is shown in the engraving, Fig. 2, p. 946.

Very large jugs, with pedestals, 7 feet in height, and 1 foot 11 inches in diameter. The accompanying Plate, 56, represents one of these jugs. Another is represented in the engraving in the next page. (Fig. 3.)

28 DIMECH, FERDINAND, *Strada Teatro, Valletta*—Carver.

Specimens of stone carvings :—

Candelabrum, 6 feet in height, and 2 feet 8 inches in breadth.

Large vase, 4 feet in height, and 3 feet 9 inches in breadth.

29 SOLER, JAMES (Foreman to Mr. G. MUIR), *Strada Reale, Valletta*—Carver.

Specimens of stone carvings :—

Vase with handles: size 1 foot 8 inches high, and 2 feet 10 inches broad.

Jug with vine-leaves ornament: size 2 feet 3 inches in height, 1 foot 2 inches wide. Oval vase, 1 foot 4 inches in width. Small basket.

Fig. 2.



Decesare's Jug of Maltese Stone.

30 TESTA, SALVATORE, *Strada San Giovanni, Valletta*—Carver.

Vase, ornamented with satyrs and flowers: size 4 feet 8 inches in height, and 2 feet 9 inches in breadth. This vase is represented in the illustration in p. 947. (Fig. 1.)

Vase, ornamented with eagles: size 1 foot 9 inches high, and 1 foot 3 inches broad. This vase is shown in the engraving in p. 947. (Fig. 2.)

31 BUTTIGIEG, MICHELE, *Birchircara*—Producer.

Specimens of manufactures in straw:—

Straw mats, hats, and caps. Samples of straw plaits.

Waterproof hats: two pliable oil-skin hats; two strong oil-skin hats.

32 GERADA, ANTONIO, & DAUGHTERS, *Strada Mercanti, Valletta*—Producer.

Basket of artificial flowers, with shells.

33 TESTA, FORTUNATO, *Strada Santa Lucia, Valletta*—Carver.

Vase of antique form, ornamented with satyrs, a wreath of flowers, and vine-leaves: size 5 feet 4 inches in height, and 2 feet 4 inches in breadth.

Vase of antique form, ornamented with vine-leaves: size 4 feet in height, and 1 foot 9 inches in breadth.

Common vase, 1 foot 6 inches in height, and 1 foot 4 inches in breadth.

34 THE CANONICO POLITO, *Vittoriosa*—Manufacturers.

Figures in wax, representing—

The grand master Valletta.

The grand master Lonzadari.

A knight of the order of Malta.

The grand master in warlike costume.

The Saviour.

Fig. 3.



Decesare's Stone Vase.

Fig. 1.



Fig. 2.



Testa's Stone Vases.

GIBRALTAR.

- 1 CHARRUY, PIERRE, *Gibraltar before the Exchange*—  
 Producer.  
 Razor strops, with handles of rock stones.

IONIAN ISLANDS.

NORTH AREA, I. J. 30.

OWING to some misapprehension, the Ionians were without knowledge of the objects and purports of the Exhibition of 1851, until very recently. Unwilling, however, that the name of the Ionian Islands should alone be wanting in the list of nations on this great occasion, the Executive Committee appealed to an Ionian gentleman, who has been induced to collect together, by the kind contribution of certain noble and eminent individuals, who have served Her Majesty in those islands, such articles in their possession as might serve as specimens, to a very trifling extent, of the products, skill, and industry of the Ionians. These products are principally articles belonging to the classes of textile and ornamental manufactures. The specimens of embroidery exhibited are extremely rich and beautiful, and form a characteristic contribution to this collection. The filigree work is also exceedingly delicate, and illustrates a department of skill in the working of precious metals which has no representative in our own country. The brooches and medallions exhibit some of the favourite devices of the Ionian artists.—R. E.]

- 1 WOODFORD, Lady, 21 *Somerset Street, Portman Square, London*—Producer.

A Greek dress, made in Corfu.

A pair of silver bracelets, made in Corfu; the one with the motto "ΣΦΙΓΓΩ ΑΔΟΛΟΝ ΦΙΛΙΑΝ." "My pressure is that of friendship without guile;" the other, "Ο ΦΕΡΩΝ ΑΓΑΠΗΝ." "He who feels affection" (offers it to you).

A silver brooch of elegant pierced work, formed by a garland of grapes and vine-leaves, surrounding the emblem of the Seven Islands.

A brooch in silver filigree-work, with the head of Corcyra on the one side, for Corfu; the winged horse of Bellerophon on the reverse, for Zante.

A Greek cap, made at Lefchimo, a village of Corfu.

Memorial clasp in gold, made at Corfu, and of remarkable workmanship; the gold filigree being placed on a plate of polished gold, which reflects it as from a mirror.

- 2 MAVROIANNI, Madame—Producer.

A gold bracelet, made at Corfu, of filigree-work, surrounding the emblem of the islands.

Two silk handkerchiefs, of fine fabric, of Zante manufacture.

An apron of muslin, made in Corfu, with a border worked on linen with the needle; somewhat similar to Dresden-work, but of larger stitch, on a very elegant and classical pattern, of grapes, vine-leaves, and butterflies.

An apron of crochet-work, remarkable for the beauty of the pattern and execution, and showing that what has but recently appeared in England as an accomplishment, has been for ages the common needlework of the Ionian peasant-girls. The border is of deep Dresden-work of magnificent effect, with emblematical designs of lions, Cupids, flowers, &c.

[These aprons are the ordinary work and every-day wear of the peasant-girls of Corfu. The dress of the Greek peasant-women, in general, being of an extraordinary richness, so that a peasant-bride's dress is often her dowry, being not unfrequently worth 400 or 500 dollars.]

- 10 **BOTANIC GARDEN, Cape Town.**  
Samples of cotton.
- 11 **MASUKI, C., Cape Town.**  
Samples of Natal cotton.
- 13 **CLARENCE, RICHARD, Cape Town.**  
Sea-elephant oil; sheep's-tail oil.  
[Sea-elephant. This animal is the largest of the seal-tribe, and is distinguished by a tumid pendulous proboscis which, in the male, can be distended and erected, whence the name applied to the species by the sealers. The sea-elephant (*Phoca proboscidea*, or *Cystophora proboscidea*) is a native of islands in the Southern and Antarctic oceans. It attains a length of thirty feet.—R. O.]
- 14 **KUNHARDT & Co., Cape Town.**  
Sheep's-tail oil.  
[The variety of the domestic sheep at the Cape of Good Hope is characterised by a tendency to an enormous accumulation of fat in the tail, which would in some cases drag upon the ground, and become ulcerated, were it not for the precaution of fastening to it a board on wheels, by which it is dragged along.—R. O.]
- 15 **THOMSON, GEORGE, Cape Town.**  
Sea-cow teeth.
- 16 **MEESER, F., Cape Town.**  
Ox horns, polished, and rough.
- 17 **WATERMEYER, C., Green Point.**  
Samples of hemp (aloe).
- 18 **BLACKBURN, J., Cape Town.**  
Karoses. Specimens of wild cats' and jackals' paws.
- 19 **DEANE & JOHNSON, Cape Town.**  
Specimens of karoses.  
[Karoses are cloaks, such as are worn by the Kafirs, made of the skins of wild animals. The numbers of rare and beautiful quadrupeds inhabiting South Africa, render these skins objects of much interest to the naturalist, as well as articles of intrinsic value.—E. F.]  
Ivory; elephants' tusks. Three Malay hats.
- 20 **HANBURY, E., Cape Town.**  
Skins of wild animals.
- 21 **BRIDGES, C., Cape Town.**  
Skins of wild animals. Kafir chair, battle-axe, hoe, &c. Buffalo and other horns. Rhinoceros-hide sticks and whips. Stone box, &c.
- 22 **CLUAPPINI, A. & Co., Cape Town.**  
Skins of wild animals. Twelve goat skins, weighing 65 lbs. each.
- 23 **RUTHERFOORD, H. E., Cape Town.**  
Samples of wheat. Ostrich feathers.  
[The export of ostrich feathers from the Cape is of great importance to the colony, and the prosperity of this trade necessarily affects the tribes of native hunters. Consequently, those circumstances which interfere with the demand for feathers at home, affect ultimately the Kafir hunters themselves. The recent disturbances produced a great impression upon the trade in ostrich feathers, and the results are severely felt by the native hunters of these birds.—R. E.]
- 26 **WOODMAN, J. C., Cape Town.**  
Manufactured olive wood.  
[The olive wood of the Cape is the product of true olive-

tree, species of *Olea*, but all distinct from the *Olea* of Europe.—E. F.]

A cabinet, composed of seven species of wood, especially of stinkwood, so called on account of the offensive smell of the wood when newly cut.

[The peculiar wood here alluded to is that of a tree belonging to the order *Lauraceae*. Its botanical name is *Oreodaphne fatens*. Its odour is universally described as most intolerable. The same tree exists in the Canary Islands, where it is known under the name of *Til*.—R. E.]

- 27 **THALWITZER, M., Cape Town.**  
Curiosities; bows and arrows; Bushman's blanket. Bark for tanning.
- 28 **HANBURY, E. J., Cape Town.**  
Rhinoceros-horn sticks and whips.  
[There are several species of rhinoceros in Africa; one of them ranges throughout the central regions; two are peculiar to the south. Three African species have two horns, the other has only one horn. They are all quite distinct from the Asiatic species. The horn is formed out of an accumulation of metamorphosed hairs.—E. F.]  
Leopard-skin.
- 29 **MOAG, W., Cape Town.**  
Kafir warrior's head-dress.
- 30 **FOORD, R., Cape Town.**  
Model in clay.
- 30A **SUTHERLAND, J., 17 Great St. Helen's, London,**  
(Agent to Twist Niet Steam Mills, of Messrs. J. F. FREDERICKSEN and T. SUTHERLAND, jun.)  
Wheat flour, the produce of the Cape Colony.
- 30B **BAZLEY, T., Natal.**  
Three bales of cotton, from Port Natal.
- SOUTH AFRICAN PRODUCTIONS, forwarded by the AGRICULTURAL SOCIETY OF THE CAPE OF GOOD HOPE.**
- 31 **REITZ, RIEDA, & Co.**—Samples of fine wool.
- 32 **BREDA, D. J. VAN, Hatch River.**—Samples of fine wool.
- 34 **PRINCE, COLLISON, & Co.**—A barrel of fine flour.
- 35 **VOLSTEEDT, J. P.**—Preserved fruits, viz., bitter oranges, green apricots, green figs, naartjes, citron, candied figs, candied naartjes, and oranges.
- 36 **MOSS, N.**—Cigars and kamaster tobacco.
- 37 **SEARIGHT, J.**—Two tins Malagas guano.
- 38 **SMITHERS, J.**—Tallow and soap.
- 39 **SCHLUSSLER, H.**—Cask of salt beef.
- 40 **MARTIN, W.**—Cask of salt pork.
- 41 **MOSSO, T.**—A roll of sole leather.
- 42 **SCHMIETERLOEW, C.**—A tippet made from the feathers of various Cape birds. Samples of sole leather. Sea-elephant oil.
- 43 **MISSIONARY STATION, GROENKLOOF.**—Quince walking-sticks, stained; riding whip, stained; and olive wood work-box.
- 44 **MOBAVIAN MISSIONARY STATION at GENADENDAL.**—Double chopping knife, bread-cutting and hunting knives, vine cutter, pocket knives, and boschlemmer knife. Box composed of 30 specimens of various woods, in the rough and polished state; olive wood box.
- 45 **LINDENBERG, J., Worcester District.**—Specimen of berry wax; specimens of beeswax.  
[The tree which yields the "berry wax" is, in all probability, *Myrica cerifera*, the berries of which yield it abundantly. Possibly it may be obtained from other species of *Myrica*. The trees from which it is obtained are found abundantly at the Cape of Good Hope.—R. E.]

46 BARN, T. A.—Sack of wheat.

47 DUMBLETON, H., *George District*.—Box, containing forty-three specimens of Cape woods, in the bark, rough and polished. Specimens of Colonial wool in the rough state.[The wool of the native breed of Cape sheep is of little value, and forms but an unimportant article of commercial enterprise. That of the sheep of the Merino breed is, however, highly esteemed, and is annually exported to the value of about 25,000*l.*—R. E.]

## SAMPLES of various WOODS indigenous to SOUTH AFRICA.

| No. | Vernacular Names.         | Uses.                                                        | Quality.                    | Locality.                                     | Height of Stem. | Diameter.  | Botanical Names.                          |
|-----|---------------------------|--------------------------------------------------------------|-----------------------------|-----------------------------------------------|-----------------|------------|-------------------------------------------|
| 1   | Tambookie wood . . .      | Sawdust used as an emetic by the Zoolas.                     | Very hard and tough.        | Port Natal . . . . .                          | Feet.<br>..     | ..         | . . .                                     |
| 2   | Pear (white) . . . . .    | In waggon-work, for felloes, &c.                             | Hard and tough              | Olifantshoek, Zisikamma .                     | 15 to 20        | 2 to 3 ft. | <i>Imbricaria obovata</i> .               |
| 3   | Iroa wood (white) . . .   | For axles, poles, &c., of waggons.                           | Very hard and tough.        | Krakakamma, Zisikamma, &c.                    | 20 ,, 30        | 2 ,, 3 ,,  | <i>Asaphes (Boesia) undulata</i> .        |
| 4   | Wild granate . . . . .    | For cabinet-makers' tools .                                  | Fine-grained and tough.     | Eastern forests . . . . .                     | 5 ,, 10         | 2 ,, 5 in. | <i>Burchellia capensis</i> .              |
| 5   | Beech wood . . . . .      | For waggon pole-tangs and felloes.                           | Soft and tough              | Forests throughout the Cape Colony.           | 15 ,, 20        | 2 ,, 4 ft. | <i>Mangilia (Mrysiue) melanophloeos</i> . |
| 6   | Wild sage . . . . .       | By cabinet-makers for chairs, &c.                            | Hard and heavy              | Ravines throughout the Cape Colony.           | 6 ,, 10         | 3 ,, 5 in. | <i>Tarhonanthus camphoratus</i> .         |
| 7   | Alder (red) . . . . .     | Waggon felloes and planks                                    | Hard and tough              | Ravines along the water-courses.              | 15 ,, 20        | 2 ,, 3 ft. | <i>Cononia capensis</i> .                 |
| 8   | Candlewood or cherry      | Waggon-building and other purposes.                          | Very hard and heavy.        | Edging the watercourses in ravines.           | 10 ,, 15        | 1 ,, "     | <i>Celastrus rostratus</i> .              |
| 9   | Amagwiwood . . . . .      | Preferred especially for waggon-building.                    | Hard and very tough.        | Moist and stony places .                      | 20 ,, 30        | 2 ,, 3 ,,  | <i>Curtisia faginea</i> .                 |
| 10  | Black olive . . . . .     | Furniture and waggon-work                                    | Very hard and tough.        | Rocky places . . . . .                        | 6 ,, 10         | 1 1/2 ft.  | <i>Olea verrucosa</i> .                   |
| 11  | Wild elder . . . . .      | Table-feet and chairs . . .                                  | Hard and tough              | Woods edging rivers . . .                     | 8 ,, 0          | 7 in.      | <i>Chilianthus arbo-reus</i> .            |
| 12  | White olive . . . . .     | Waggon-work, poles, &c. .                                    | Hard and tough              | . . . . .                                     | 15 ,, 20        | 2 to 3 ft. | . . .                                     |
| 13  | Cedar . . . . .           | Coopers'-work, water-wheels, not being affected by water     | Light, short, and resinous. | High rocky places in the Cedar Mountains.     | 10 ,, 25        | 1 ,, 4 ,,  | <i>Callitris Ecklonii</i> .               |
| 14  | Onderbosch . . . . .      | Waggon-tents, thatching-spars.                               | Very tough and durable.     | Underneath high trees in the forests.         | 5 ,, 10         | 1 ,, 3 in. | <i>Trichocladus crinitus</i> .            |
| 15  | Safranwood . . . . .      | Waggon-work, the bark for tanning.                           | Hard and close              | Woods in the eastern part of the colony.      | 10 ,, 15        | 1 ,, 2 ft. | <i>Crocoxyloen excelsum</i> .             |
| 16  | . . . . .                 | Waggon-work . . . . .                                        | Hard . . . . .              | . . . . .                                     | ..              | ..         | <i>Mystroxyloen</i> .                     |
| 17  | . . . . .                 | Furniture-legs, &c., and tools                               | Hard and tough              | Shady spots in ravines . .                    | 5 ,, 12         | 6 to 8 in. | <i>Royena lucida</i> .                    |
| 18  | Silkbark . . . . .        | Carriage-poles, spars. The bark, when broken, appears silky. | Tough and close             | Woods in ravines . . . . .                    | 7 ,, 12         | 7 ,, 9 ,,  | <i>Celastrus</i> .                        |
| 19  | . . . . .                 | Waggon-work, and the bark for tanning.                       | Very tough . . . . .        | Forests . . . . .                             | 5 ,, 10         | 1 ,, 8 ,,  | <i>Rhus tomentosa</i> .                   |
| 20  | Red wood . . . . .        | Furniture, tools, &c. . . . .                                | Short and hard              | Forests in the eastern districts.             | 12 ,, 15        | 1 ,, 2 ft. | <i>Diporidium arbo-reum</i> .             |
| 21  | Gomasie wood . . . . .    | Veneering and tools . . . .                                  | Hard and close              | Forests of Nyama River and eastern districts. | 12 ,, 15        | 1 ,, 9 in. | <i>Gonioma Kamassi</i> .                  |
| 22  | . . . . .                 | Waggon-work and tools . . .                                  | Hard and tough              | Ravines, shady and moist places.              | 7 ,, 12         | 3 ,, 10 ,, | <i>Celastrus?</i>                         |
| 23  | Pear (hard) . . . . .     | Waggon-poles, axles, &c. . .                                 | Hard and tough              | Stony and moist places within the colony.     | 15 ,, 20        | 2 ,, 3 ft. | <i>Olinia cymosa</i> .                    |
| 24  | Ningroe . . . . .         | . . . . .                                                    | Hard and heavy              | . . . . .                                     | ..              | ..         | . . .                                     |
| 25  | Yellow wood . . . . .     | Beams, planks, and building.                                 | Soft and light . . . . .    | Forests of George District.                   | 15 ,, 20        | 2 to 4 ,,  | <i>Podocarpus elongatus</i> .             |
| 26  | . . . . .                 | Spars, rafters, &c. . . . .                                  | Soft and light . . . . .    | Moist places by rivulets, Eastern Province.   | 10 ,, 15        | 1 ,, 7 in. | <i>Virgilia capensis</i> .                |
| 27  | Quarribush . . . . .      | Felloes, the berries as food .                               | Short and hard              | Woods of Eastern Province                     | 6 ,, 8          | 6 ,, 10 ,, | <i>Euclea undulata</i> .                  |
| 28  | Black bark . . . . .      | Waggon-poles, tools, &c. . .                                 | Hard and very tough.        | Moist and shady places . .                    | 10 ,, 12        | 1 ft.      | <i>Royena villosa</i> .                   |
| 29  | Iron wood (black) . . . . | Waggon-work . . . . .                                        | Very hard and tough.        | Forests of Eastern Province                   | 13 ,, 20        | 2 to 3 ft. | <i>Olea undulata</i> .                    |
| 30  | Alder klip . . . . .      | Waggon work . . . . .                                        | Hard and close              | . . . . .                                     | 10 ,, 15        | 1 ,, 2 ,,  | <i>Plectronia</i> .                       |
| 31  | Stinkwood . . . . .       | Furniture, gun-stocks, waggon-work                           | Hard and tough              | Many forests . . . . .                        | 20 ,, 30        | 3 ,, 5 ,,  | <i>Oreodaphne bullata</i>                 |
| 32  | Ash . . . . .             | Furniture, planks . . . . .                                  | Soft and tough              | Forests of Eastern District                   | 10 ,, 20        | 1 ,, 3 ,,  | <i>Ekebergia capensis</i> .               |
| 33  | Milkwood . . . . .        | Felloes, boat-ribs, and waggon-work.                         | Hard, milky, and tough.     | Stony places . . . . .                        | 5 ,, 10         | 1 ,, 3 ,,  | <i>Sideroxyloen inerme</i>                |
| 34  | Horsepis . . . . .        | Felloes . . . . .                                            | Hard and tough              | Forests of Eastern Province                   | 5 ,, 10         | 1 ,, "     | <i>Hippobromus alatus</i> .               |
| 35  | Gustman . . . . .         | . . . . .                                                    | Tough . . . . .             | . . . . .                                     | ..              | ..         | . . .                                     |
| 36  | Crostborn . . . . .       | Waggon-spars, poles, &c. . .                                 | Hard and tough              | Woods in ravines . . . . .                    | 5 ,, 8          | 3 to 9 in. | <i>Plectronia ventosa</i> .               |
| 37  | Wild chestnut . . . . .   | Beams, planks, &c. . . . .                                   | Soft and light . . . . .    | Forests in ravines in Eastern Province.       | 15 ,, 30        | 3 ,, 4 ft. | <i>Calodendron capense</i> .              |
| 38  | Alder (white) . . . . .   | Furniture, planks, &c. . . .                                 | Tough and soft              | Moist places in ravines in Eastern Province.  | 10 ,, 12        | 2 ,, 3 ,,  | <i>Weinmannia trifoliata</i> .            |
| 39  | Noentigara . . . . .      | . . . . .                                                    | Hard and close              | . . . . .                                     | ..              | ..         | <i>Euclea</i> .                           |
| 40  | Black wood . . . . .      | Tools, furniture, &c. . . . .                                | Tough and hard              | . . . . .                                     | ..              | ..         | <i>Royena</i> .                           |
| 41  | Yellow wood . . . . .     | Deals, beams, planks, &c. .                                  | Light and short-grained.    | Forests in Eastern Province                   | 20 ,, 50        | 2 to 5 ft. | <i>Podocarpus latifolius</i> .            |
| 42  | Koosbo . . . . .          | Waggon-work, felloes, &c. .                                  | Light and short-grained.    | Woods in Eastern Province                     | 5 ,, 8          | 1 ,, 2 ,,  | <i>Mystroxyloen Kubu</i> .                |
| 43  | White wood . . . . .      | Rafters, spars, &c. . . . .                                  | Light and soft . . . . .    | . . . . .                                     | 10 ,, 12        | 1 ,, 8 in. | <i>Virgilia</i> .                         |

48 SCHEUBLE, J. H., & Co.—Specimens of medicinal herbs and drugs.

49 SEPPE, H.—Impure carbonate of soda, prepared from gunna ashes.

50 PASS, A. DE—Samples of guano.

51 WATERMEYER, C.—Orchilla weed.

52 JOUBERT, J. G.—Honey.

53 BUCHANAN & LAW—An elephant's tusk, weighing 103 lbs., another weighing 97 lbs.

54 CLARENCE, R.—Dried fruits, viz:—Almonds, peaches, raisins, apricots, pears, currants, and walnuts.

Samples of sea-elephant oil.

55 CALF, J.—Specimens of plumbago, Fuller's-earth, &c. Box of oyster shells, of geological interest, from position of deposit being at the top of Grass Ridge.

56 GREIG, G., & Co.—Specimens of iron ore.

57 A library chair, presented to C. B. Adderley, Esq., M.P., by the inhabitants of the Eastern province of the colony of the Cape of Good Hope.

[The chair was designed by T. Baines, and carved by J. Hart, of Graham's town. The back consists of two panels, carved, in wood of a lighter shade than the framework; each panel being enclosed in scroll-work. Between the upper and lower division, and in the centre of the back of the chair, is a cluster of native weapons and implements; the assagai and the shield of the Kafir, the bow and quiver of the wandering Boshman, the war-axe and plume of the Bechuana. On one side are placed the arms of the British settler, his rifle, hunting-knife, and pouch; on the other side, the long elephant gun, the powder-horn and belt of the Dutch Boer. The upper panel represents a forest scene. The principal group in the immediate foreground consists of an elephant, rhinoceros, and buffalo; on the left, a gnu is represented galloping; in the distance, are groups of giraffes and ostriches; and above, the carrion vulture appears to soar. The lower panel represents a South African scene. A wagon is about to descend the bank of a rivulet. On a ridge, overlooking the drift, down which the leading oxen are descending, is a Kafir hut. In the mid-distance is placed a frontier homestead, with verandah and porch; and rising immediately behind it, a lofty and rugged krantz: mountains fill up the back-ground. The cushion is worked in silk, on black velvet: it consists of a group of wild flowers, surrounded by a wreath of vine-leaves and grapes. The lower part of the chair, below the cushion, is surrounded by a frieze: the front is carved with a wheat-sheaf, and a festoon of cobs of Indian corn. The aloe, a characteristic of South African scenery, is grouped on one side, with a stem of Kafir millet; and on the other, with Indian corn.

58 WATSON, H., *St. Peter's Chambers, Cornhill.*

Pair of polished ox horns, (with head complete,) measuring from tip to tip 8 feet 4 inches, and 21 inches in circumference—from Port Natal; and stone slab, from Natal, mounted as a table.

58A CROUCH.

A model of machinery of H. M. S. "Dec."

59 WELLS, JOHN & Co., *Regent Street.*

A slab of coloured marble, from the district of Natal, mounted on a stand of oak grown on the estate of Lord Willoughby D'Eresby; carved by the exhibitors.

60 BUSH, C. J., *12 Pancras Lane, London.*

Specimen of red ebony, from Natal, with fourteen engine-turned draughtsmen, made from part of the same. The wood has not been dyed, but merely oiled and polished.

Elephant's tusks, found near Graham's Town. The heaviest weighs 331 lbs., the lightest 134 lbs. The longest is 8 feet 6 inches in length and 22½ inches in circumference at the base, and its weight is 167 lbs.

## WESTERN AFRICA.

SOUTH AREAS, L. M. 32.

THIS collection of articles is a very complete representation of native products and of the results of native industry. It is contributed, however, exclusively by British exhibitors interested in this colony. The raw materials are very interesting. They include specimens of woods, among which is the celebrated African teak, so extensively used for purposes of ship-building, construction, &c. Specimens of cotton, ginned and otherwise, some of which grow spontaneously on the banks of the Niger. Raw silk and other textile materials are likewise illustrated. Among the articles of food are specimens of arrow-root, coffee, shea butter, dried fruit, &c. The most interesting and extensive part of the collection consists in the textile productions of native industry, which are extremely varied, and exhibit much simple ingenuity and ornament. The baskets, weapons, and miscellaneous personal and domestic fittings shown, have also much interest attached to them individually and to the circumstances of their production.—R. E.

1 WESTON, WARWICK, *73 Gracechurch Street, London*—Importer.

- 1 Teak timber or African oak, for ship building, &c.
- 2 Ironstone. 3 Cotton with the seed.
- 4 Cotton, cleaned, without the seed. 5 Palm oil.
- 6—7 Bennie seed and ground nuts, from which oil is extracted
- 8 Arrow-root. 9 The root of arrow-root.
- 10 Shea butter. 11 Ginger. 12 Coffee.
- 13 Pod pepper. 14 Cayenne pepper.
- 15 Gum copal.
- 16 African mats and small baskets, made there from dried grass.
- 17 African country cloths, made there from their own cotton.

These productions are all from the Western Coast of Africa.

2 FORSTER & SMITH.

- Tobes, or cotton robes, from Sierra Leone.
- Pagnes, or cotton cloths, from Gambia.
- Knife from Gambia.
- Grass-cloth from Sierra Leone.
- Table-mats from Gambia.
- Leather pouch containing MS. extracts from the Koran.
- Leather pouches, worn as charms in Gambia.
- Ashantee glass armlets, the glass obtained by melting European beads.

3 BROWN, JOSEPH PETO, *Cape Coast Castle, Gold Coast, West Africa.*

A large silk-cotton horse-cloth, manufactured at Dahomey, Africa; worn by the king's favourite son.

4 ROTHERY, Miss, *10 Stratford Place, London.*

Two large wrought-cotton counterpanes, manufactured in the Cape de Verd Islands.  
Three silk pangs, or mantles, manufactured in the island of San Nicolas, Cape de Verd Islands; worn by the ladies of the island.

5 TROTTER, Captain HENRY DUNDAS, R.N.

Various articles of African growth and manufacture, purchased and chiefly manufactured at Egga, on the right

bank of the Niger; and brought to England by the Exhibitor.

1 Specimen of *Samia Aduga* raw silk. This silk can be obtained at Brini Caumatown, in the Haussa country.

2 Specimen of *Samia Aduga*, as it is manufactured at Kattam Karafi. This yellow dye is a species of arrow-root, which grows wild in some places on the banks of the Niger, and also on the coast.

3 A specimen of raw cotton, which grows spontaneously on the banks of the Niger, and is often cultivated by the natives.

4 Specimen of lime, a material made of bones burnt into ashes, mixed with water, and dried in the sun. It is used by those who spin thread for the purpose of keeping their fingers dry.

5 Poisoned arrows, such as are used by the Felatahs or Fulas, as well as by the people of Yoruba.

6 Specimen of cotton thread, including white and blue.

7 Ropes made of native hemp.

8 Female country cloth, such as is made into dresses and worn by the higher classes: it is manufactured at Yabotchy. The woollen yarn that is intermixed with the cotton is of European manufacture.

9 A goat or sheep skin.

10 Specimens of female dresses, made of country cloth: these are worn by the higher classes. They are manufactured at Illoryn, Yoruba country, and at Moko, in the Haussa country.

11 Specimens of a female fashionable dress, made of country cloth, and worn by the higher classes. The cloth is manufactured at Nikij or Babuh, in the Yoruba country. The brown cotton is taken from the silk cotton-tree, (a species of *Bombax*). This immense tree grows on the Gold Coast, and in most other parts of the west coast of Africa. The natives make their canoes, by hollowing it out and shaping it to the required size. The green leaves when just on the point of budding are very wholesome, and are used as vegetables.

12 Specimens of female dresses of country cloth, manufactured at Seluh, a town nine days' journey on foot from Nubba, situated on the left bank of the Niger.

13 Specimens of a female dress, made of country cloth, and generally worn, after having been dyed, by the higher classes as a shawl: it is manufactured at Yabotchy.

14 Specimens of female dresses, made of the country cloth which is manufactured at Kilamij and in Yoruba country.

15 Specimens of female dresses, made of country cloth, and worn by all classes. It is manufactured in Yabotchy and Yoruba.

16 Specimens of female dresses, made of country cloth, and worn by the higher classes. The red silk is to be procured only at Brini Canu: it is sold by the Arabs.

17 A variety of other country cloths, which are made into dresses, and worn by different classes. Manufactured at Yoruba, Abuna, and Egga.

18 Specimen of full-size country cloth, used for dresses by the middle classes: it is also made into counterpanes. It is manufactured at Little Popo, in the Bight of Benyu. The red thread is of European manufacture.

19 Female head-bands, such as are worn by the higher and lower classes. They are manufactured at Yabotchy and Egga.

20 Specimen of a fine dress head-band, as worn by females of the higher class of people. The red silk is brought by the Arabs through the desert, from Tripoli into Haussa country, and amongst other towns, to Birmi or Brini Canu.

21 Specimen of a female head-band, 4 ft. 1 in. in length. The brown cotton is taken from the silk cotton-tree.

22 Specimens of fine and blue-glazed tobies, such as are worn by the higher class of natives. The tobe is glazed in the following manner:—After the cloth has been thoroughly dyed with indigo it is hung up until it is completely dry; it is then spread on a wooden roller, and rubbed by hand with the shell of a snail: this produces the gloss.

23 Fine plain and dyed unbleached cotton tobe.

24 Fine dress striped tobe, such as is worn by the higher classes. The yellow colour is dyed at Kattam Karafi, a town on the left bank of the Niger, a short distance above its confluence with the Chadda. The red silk is brought by the Arabs into the Haussa country.

25 Fine checked short tobe, woven with raw silk: it is worn by the higher classes.

26 Specimen of a fine checked long tobe, and Haussa trousers: it is braided with red silk about the ankles, and is made after the Turkish fashion: it is worn by the higher classes.

27 Strainer or sieve, made out of slips of bamboo: it is manufactured at Brini Canu.

28 Small earthen cooking pot and cover, earthen dishes, and stands for lamps; used by the higher classes.

29 Cushion. The red baize is of European manufacture; the yellow skin is dyed by the natives of Kattam Karafi.

30 Strings of fancy palm-nut beads, made out of burnt kernels. They are worn round the waist and neck by respectable females.

31 Coloured basket, made of bamboo; it is manufactured at Birmi, or Brini, in the Haussa country.

32 Basket to hold provisions, rice, corn, &c.

33 Calabash bowl; a wooden bowl carved out of solid wood; and calabashes of various sizes. Vessels of this kind are used for containing solid and liquid food. All calabashes are made out of a species of pumpkin, which is not edible; it has a bitter taste, similar to that of quassia. It is applied to various purposes, and is made by the natives in the Bights of Benin and Dahomey. The largest sizes are between 12 and 30 inches in diameter. They are used for conveying provisions from one place to another.

34 Specimens of wooden carved ladles or spoons.

35 Bag used for holding corn or articles of commerce.

36 Netted bag, used for exposing articles of commerce in the market-places.

37 Dahomian leather bag.

38 Carved ivory bracelet, from Egga.

39 Two mats from Egga, brought there by Richard Lander, in 1833.

5A M'WILLIAM, J. O., M.D. F.R.S. (Principal Medical Officer of the late Expedition to the Niger).

1 Specimen of shea butter, made of the fat of the *Bassia Parkii*, from Egga, on the River Niger.

[In the travels of Mungo Park frequent mention is made of *shea butter*, the product of the shea-tree. He described this tree as resembling "the American oak, and the fruit—from the kernel of which, first dried in the sun, the butter is prepared, by boiling the kernel in water"—as having "sometimes the appearance of a Spanish olive." He remarks of the butter, that it has a richer flavour than the best butter he had ever tasted made of cow's milk, and states that the growth and preparation of it seemed to be amongst the first objects of African industry, and formed one of the principal articles of the inland commerce of a large portion of the region which he traversed. Specimens of the plant, and accurate drawings, were obtained during the Niger expedition. It is a saponaceous tree, of the genus *Bassia*, allied to the Indian oil-trees and others, the fruits of which yield, on pressure, valuable oils.—E. F.]

2 Camwood dye ball, from the confluence of the Niger and the Tchadda.

3 Bow and arrows, with iron barbs, from the Icari market, on the River Niger.

4 Felatah spear, from Kakundrah.

5 Small musical instrument from Kakundrah, on the River Niger.

6 Specimen of cloth made at the confluence of the Niger and the Tchadda.



7 Specimen of cloths from Egga and Kakundrah, on the River Niger.

8 Specimen of horn ornamented on silk, such as is worn by the females at Iddah, on the River Niger.

9 Small leathern bottles for containing the galena which is used to dye the eyelids. They were brought from the confluence of the Niger and the Tchadda.

10 Tobe, embroidered in front with needlework, such as is worn by the Mallams at Rabbah (Filatah town), on the River Niger.

11 Specimens of breeches as worn by the same.

[These articles, Nos. 10 and 11, are the property of Sir JAMES CLARK, Bart.]

12 Specimens of knitted and small scarfs from Egga.

13 Specimens of broad-brimmed straw hat, from Kinee, or Icar Market, on the River Niger.

14 Specimens of earthenware, from Icar Market, on the River Niger.

15 Specimens of ropes of vegetable fibre, by means of which the Africans ascend the naked trunks of the palm trees.

16 Specimens of calabash workmanship, comprehending a series of dishes of various kinds and sizes, and platters, spoons, bottles, cups, &c.

17 Pipe, from the confluence of the Niger and the Tchadda.

18 Staff of honour, such as is carried before the African chiefs.

18A Fetische from the River Congo, in the garb of a slave travelling through the country. Bag made by one of the wives of Obi, the king of Eboe: River Niger. Phosphate of lime from bones, used by the cotton-spinners to dry the tips of their fingers: at the confluence of the Niger and the Tchadda.

5B JAMIESON, JOHN, *Custom-house Agent, London.*

Mandingo cup, sword, and dagger, from the River Gambia.

Calabash and spears, brought from the Gambia.

6 HUTTON, W. B. & SON, 25 *Watling Street.*

1 Dahomey cloth, or dress; manufactured at Abomey, capital of Dahomey, and 90 miles from the sea-coast; presented by the king in 1850. The whole of the material, except the red gown, spun and dyed at Abomey. The cloth measures 5 yards by 2½ yards, and was made in a loom 5 inches wide.

2 Dahomey chief's throne and cushion; made at Abomey, capital of Dahomey, and 90 miles from the sea-coast; presented by the king of Dahomey. The stool carved out of a solid block of wood (sessaw-tree).

3 Tusk of the queen elephant.

4 Grass hat, made and worn by the natives of Dahomey.

5 Popo cloth, or dress; manufactured at Popo, on the Oil Coast. The whole of the material, except the red, grown, spun, and dyed in the country; the cloth measures 3½ yards by 2 yards, and was made in a loom 20 inches wide.

6 Basket, manufactured by the natives of Little Popo.

7 Ashantee chiefs' cloth, or dress; manufactured at Coomasey, capital of Ashantee, several miles distant (in the interior) from Cape Coast. The whole of the cotton, except the red, grown, spun, and dyed in the country; the cloth measures 4 yards by 3½ yards, and was made in a loom 3 inches wide.

8 Copper weights, used by the Ashantees for weighing gold. Cast in clay mould.

9 Powder and shot belt, made of leather, in the neighbourhood of Cape Coast.

10 Specimen of the intergrowth of two branches of different trees, from Cape Coast.

11 Dagger; made at Grand Bassam.

12 Grass-cloth; the material grown and dyed by the natives of St. Andrew's, Ivory Coast. The only article of clothing worn by the natives.

13 St. Andrew's drum, made of monkey-skin.

14 Mandingo cloth, manufactured by the Mandingos, on the River Gambia. The cotton grown, spun, and dyed in the country.

15 War-dress and sword, made and worn by the Mandingos on the River Gambia.

16 Fiddle, made and used by the Mandingos, River Gambia. Specimens of palm fruit, kernels, and oil. Specimens of palm-kernel oil, and kernel-oil soaps. Ground nuts, oil, and soap.

7 KING, R. & W., *Bristol.*

Three cushions from the king of Dahomey. Two pieces of cotton cloth of the same country.

8 FORBES, Commander F. G. (R.N.)

Two weavers' looms, chief's stool and footstool, and two lamps, from Dahomey.

Dress worn by the Amazons of the king of Dahomey.

Bag manufactured at Wydah.

9 MATSON, Captain (R.N.)

Cap, as worn by the chiefs of Kabenda, Congo.

Musical instrument, with a gourd as a sounding-board, River Congo.

Fetisches, from the country on the banks of the same river.

10 MILLER, T. Esq., *Ireland*, and also of *San Nicolas, Cape de Verd Islands.*

Door-lock, as used at the Cape de Verd Islands. This lock is nearly the same as that which has been in use with the Egyptians for some forty centuries.

11 TOWNSEND, G., Esq., *Exeter.*

Specimens of cloth. A market basket. Iron bracelets. A dress, as worn by the natives. A drum. All from Abbrokuta.

12 BEECHAM, Rev. Dr.

Hat and messenger's bag of Mandingo manufacture, from the Gambia.

Large Ashantee cloths. Pipes, from Coomassie.

Brass figures, used as weights.

Chief's stool and large round cushion, from Ashantee.

Cartouche box of Dahomey manufacture.

Two market-baskets, water-pot, and market-bags made of grass, from Badagry.

Specimen of raw indigo, from Abbrokuta.

13 TOWNSEND, G., *Exeter.*

Various articles from Abberkutu, a town of 50,000 inhabitants, in the Yoruba country.

14 ACLAND, Lady.

Two pieces of native cloth from Abbrokuta.

15 FORBES, Commander F. G. (R.N.)

Various articles from Dahomey.

16 SUTHERLAND, Her Grace the Duchess of.

Various birds, from the River Niger.

17 ACKLAND, Sir T. D. Bart., M.P.

A sword or hatchet, from Abbrokuta.

18 STRAITH, Major H.

Two grass cloths from Abbrokuta.

19 FADDY, Col. P., R.A., *Woolwich*.—Proprietor.

A koodoo, a harte-beest, and a water-boc (a male), killed by Captain Faddy, R.A., nearly 2,400 miles from Cape Town, in Kaffirland. The water-boc (a male) is the only specimen that has ever been brought to Europe.

- 20 **FADDY, Mrs. Col.—Producer.**  
Gold aresbesque scarf of Fes manufacture.  
Pair of Barbary ladies' slippers.  
Vase of Barbary ware.
- 21 **HUTTON, JAMES FREDERICK, 25 Watling Street—**  
Importer.  
African produce:—Cotton cloth, made by the slaves of the king of Dahomey, at Abomey, 90 miles in the interior of Africa. Cushion for a seat, made at the same place, and by the same people. Cotton cloths made at Popoe, on the Slave Coast of Africa, and at St. Andrew's, West. Grass cloths, for wearing round the loins. Cotton cloths, from the banks of the river Gambia. Baskets, from Popoe. The cotton of these manufactures is grown and spun in Africa by the natives; all the dyes are native, except the red.
- 22 **JAMIESON, R., Esq., Liverpool.**  
Articles from the country on the banks of the Niger and other parts of Western Africa:—  
1—4 Copper jug, &c. 7 Earthenware pot.  
10—15 Calabashes, with rings, and with spoon.  
18 Basket. 27—29 Three combs. 32 Rings.  
33 Tablet. 34—38 Five fans.  
39—41 Grass fan; specimens of antimony ore; and pepper.  
42—63 Two grass bags; pain sandals; boots; flask; brass case, earthenware, and kid skin for antimony; spurs; tin case for papers; leather knife; reaping-hook; small arms; leather wallet; string of beads; leather threads; beads.  
65, 66 Two knives.  
67—69 Calabash handles; leather; nuts.  
79 Spear-head.
- 23 **SWANZY, A., Esq.**  
Specimens of rock gold, from Ashantee.
- 24 ———  
Specimens of Dahomian cloth, from Porto Rico.

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### GOLD COAST AND ASHANTEE.

A COLLECTION of a variety of articles of native production, forwarded by two exhibitors, form the contribution of this district to the Exhibition. The miscellaneous objects thus offered to view present many interesting subjects for study.—R. E.

- 1 **FORSTER & SMITH, Messrs.**  
Ashantee glass armlets, composed of glass obtained by melting down European beads. Cotton cloth prepared with native dyes. Silk cloth woven from silk threads obtained by unravelling European silk goods. Copper figures, used as gold weights by the natives—all from Ashantee.  
Weaving and spinning instruments; cotton cloths; gold ornaments; pottery used for cooking; pipe heads and pipe stem; native leather; grass and mixed grass and cotton cloths—all from the Gold Coast.

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### ST. HELENA.

SOUTH AREA, Q. 32.

THIS small but interesting island, represented by four exhibitors, has sent a few specimens of its products to the Exhibition. The Agricultural Society recently established in the island, with a view to promote the cultivation of several plants which may yield a profitable return to the farmer, has forwarded specimens of

raw cotton, a box of alkali, and some rock salt. Coffee has also lately been grown on the island, and a specimen is sent for examination. Interest will be excited by a few minerals from Longwood, the residence of the Emperor Napoleon.—R. E.

- 1 **MASSANS, SAMUEL.**  
Sample of coffee grown in St. Helena.
- 2 **AGRICULTURAL SOCIETY of ST. HELENA, per Capt. BOLTON, 18 Wilton Street, Belgrave Square.**  
A box of raw cotton.  
A box of alkali, made from the Salsola plant.  
A bar of rock salt.
- 3 **MAGNUS, SAMUEL, 127 Fenchurch Street.**  
A bag of coffee from St. Helena.
- 4 **BLOFELD, JOHN HARCOURT, 4 Hemus Place, King's Road, Chelsea—Producer.**  
Large volcanic stone taken from the wall of the Emperor Napoleon's drawing-room. Piece of stucco from the same spot, and made with the St. Helena lime, which is different to the European. Presented to the exhibitor by Captain Mason, the present leaseholder of Longwood.  
Piece of limestone from the top of a hill by Sandy Bay.  
Lime from the kiln, at Sandy Bay. Stone impregnated with nitre, from the Red Stone Quarry, by James Town. Nine specimens of rocks.  
Six petrified shells, "Bulimus," now extinct, from a stratum 1,700 feet above the level of the sea, and from a spot a little behind Longwood. Box, containing earth in which the above are found. Box, containing birds' bones, which abound in the same stratum. Also some fragile shells found in a stratum on a hill above the "Briars," and about 1,200 feet above the level of the sea.  
Partially petrified birds' eggs. Similar substances abound in the stratum, which is supposed to be the remains of a bed of earth, which, at a very distant date, was the abode of numerous aquatic birds; and that this stratum (portions of which are in the boxes sent) consists of earth saturated with, and partly consisting of, the debris of their eggs, feathers, dead bodies, nests, the remains of the animals on which they fed, &c. In St. Helena, it is considered that the white substance in the stratum is the pulverized remains of the shells "Bulimus."  
Three petrified shells; bivalves. Four pieces of coral from a depth of 380 feet, but within 4 feet of the shore. Three pieces of cement, painted black on the surface, from the interior sarcophagus of Napoleon's grave.  
Piece of the willow tree, under which Napoleon was buried; exhibited as a vegetable production peculiar to the island.  
Snuff-boxes: French polished, made from this tree; varnished, to show the wood in its plain state; and made from a willow tree which Napoleon planted behind the library at Longwood.  
St. Helena cotton, with seeds. Coffee seeds and plums. Caraway branches, with seeds. One reed. Two excrescences from fir trees in the plantation at Longwood. Seeds of cow-grass. A capsicum. Part of the stem of a branch of ginger. Small branch and plums of the banyan tree. Stem and flower of the sweet-smelling geranium, from the Briars. Two sea-beans.  
Buds and flowers of the "red wood;" the flowers grow in pairs, one white, the other crimson. The tree is indigenous to St. Helena. Three small pieces of Napoleon's coffin, made of this wood.  
Leaves and embryo fruit of the sago pine. Branches of the "gum wood" (indigenous to St. Helena) from the avenue at Longwood. Modern shells, various. A number of the St. Helena Gazette, and of Saul Solomon's Shipping List.

## MAURITIUS.

SOUTH AREA, Q. 31.

THAT part of the natural history of a country which is in direct relation with commerce is generally the most universally interesting, and the objects included in this collection are those which appear as its representatives in this instance. The production of raw silk is engaging much attention in the Mauritius, the natural capabilities of the land and climate appearing favourable to its prosecution. Sugar, cocoa-nuts, rice, and spices, form important articles of the commerce of the island, in addition to its export of ebony. Of sugar, a few years since this island exported to England nearly seventy million pounds in one year.—R. E.

## 1 GREY, The Countess.

Basket and wreath of flowers from the Séchelles Islands, made from the leaves of the palm of the Séchelles (*Nipa fruticans*). A nest of baskets.

## 2 DUPONT, EVENA, Esq., Port Louis—Producer.

A packet containing seven pounds of white silk, the produce of the island of Mauritius, from silkworms reared in the district of Tamarin.

[The quality of the silk must not be taken as a criterion of what Mauritius will produce, as the manufacture is in its infancy, and has only lately been commenced. About 300 acres of ground have been planted in the cooler districts of Mauritius with mulberry trees, which have rapidly grown up and are now fit for use. A company has been formed in Mauritius by the exertions of a barrister and planter there, called the "Filature Evenor Centrale." An experienced "fileuse," Madame Boildieu, has been engaged from the neighbouring island of Bourbon, and is now giving instruction to various proprietors. Some ten persons rear worms and send to the Company regular supplies of cocoons, and eighty-seven other proprietors have received cocoons and mulberry cuttings from the Company. It is considered that this manufacture will flourish and increase rapidly in the island, and form eventually an important branch of trade, the climate and the soil being peculiarly suitable to the profitable rearing

of the silkworm. From Bourbon it is stated that silk was sent to Paris of such fine quality as to fetch 111 francs per kilogramme, or about 2l. 4s. the pound.]

## 3 WEBB, CHARLES JOHN, London—Importer.

A bag of Mauritius sugar, the produce and manufacture of the Phoenix estate, obtained direct from the sugar-cane expressed in a horizontal mill; the juice clarified by steam; evaporated to 27 Beaumur in common open iron pans; filtered through bags and animal charcoal; boiled in a Howard's vacuum-pan. This sugar is said not to have been re-boiled, re-made, or refined in any way, but to be pure cane sugar, without the admixture of bullock's blood or any albuminous substance, or the employment of any acetate of lead.

## 4 THE ROYAL SOCIETY OF NATURAL HISTORY OF MAURITIUS (Imported by A. STEELE, 107 Leadenhall Street).

Cases of straw baskets, rice, liqueurs, and cocoa-nut oil; a bag of cloves, a dial, and a cask of cocoa-nuts.

## 5 BALKFIELD &amp; Co., on behalf of Mad. E. CHAPON and Mdlles. GANCOURT (Importers, Messrs. S. BAKER &amp; Co., London).

Works and ornaments in straw, made on the Séchelles. Bouquets in shell-work; baskets made of leaves of the cocoa; vases, dials, &c.

## 6 MELLON, M.

Small casks of cocoa-nut oil. Woods found on the Séchelles. Specimens of sea cocoa-nuts.

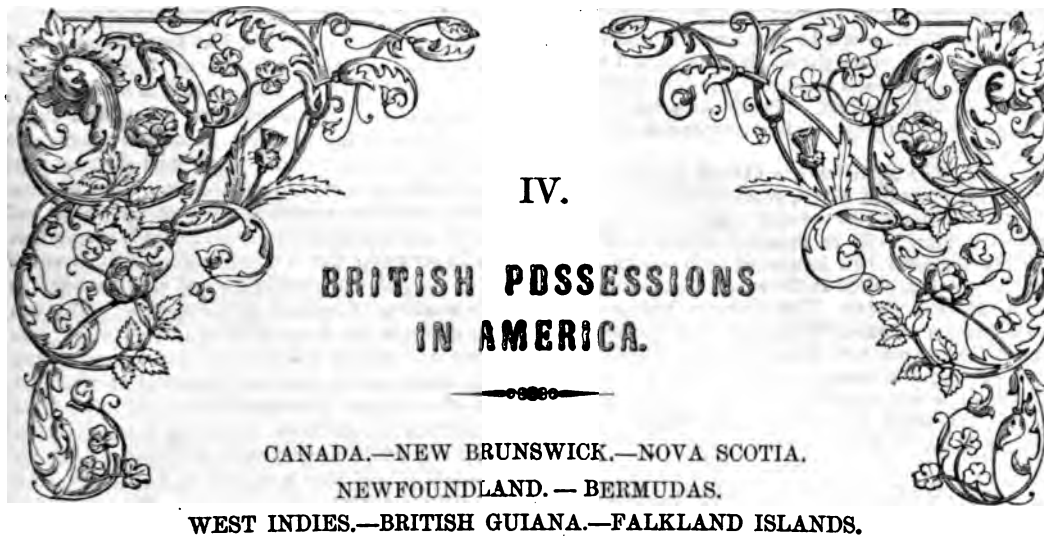
A case of choice liqueurs, in 12 bottles, from the manufactory of M. Eug. Bérichon.

## 7 READER, J. S.

A case containing samples of Mauritius rice, grown on the "Champ de Mars," Port Louis, raised without any irrigation or other watering. The sack containing the sample is made of the leaves of the Vacona tree (*Oryza saliva*), the ordinary package of the colony for sugar. The soil very dry, and exposed to high and drying winds. Rice of this kind is said to possess flavour and farinaceous quality, at least equal to that exhibited in Carolina rice.

A variety of ornamental basket work from the Séchelles. A *Coco-de-mer*. Sample of cloves, &c.





Each dependencies of Great Britain are enumerated under this head. Of these, the most extensive collection of articles is that from the important possessions of this country in Canada. This collection, which is more particularly characterised below, is rich in raw materials and products. The other dependencies named are represented but by few exhibitors; but the articles exhibited deserve the attention of all interested in the commercial well-being of the countries and islands represented.—R. E.

#### C A N A D A.

SOUTH ARRAS, L. M. 31, and N. O. 31, 32.

This vast and important territory is represented in the Exhibition by about two hundred and twenty exhibitors. The articles contributed by it are distributed among several Classes, but the raw materials preponderate; and of these a highly-instructive series is presented. The efforts which have been made by the Government at home to develop the mineral wealth of this colony have been amply rewarded by the success which has attended the explorers, and the results which in some measure are brought to notice in the Exhibition. A detailed account of the geological survey and its fruits will be found in this Catalogue. Many of the minerals exhibited must take an important commercial position on their locality and means of transport becoming known and developed. Among other and in reality more precious metals, the discovery of gold in the drift of the Eastern Townships along the south-east side of the Green Mountain range will be regarded with curiosity. Some fine specimens are exhibited, one of which weighs about a quarter of a pound. Copper promises to be more available for direct commercial purposes, and a cake of this metal is sent for exhibition. In this instance the ore has been smelted in Canada. A still more important mineral is the specular iron ore, of which a most valuable and important bed exists near the waters of the Ottawa, with abundant sources of water power, and ready means of transport. Most excellent iron is obtained from the bog-iron ore, wood charcoal being employed in its manufacture: it is comparable in its qualities with Swedish iron; and the stones and cast-iron work made from it are less liable to crack than those made in this country. In addition to metalliferous minerals, the serpentine and steatite, plumbago, asbestos, and lithographic stones, promise to become valuable sources of native wealth. Of these fine specimens are exhibited.

The Canadian timber, represented by the carefully-arranged Trophy in the centre of the Western Main Avenue, is scarcely less interesting to the naturalist and merchant than the minerals. The excellent qualities of this timber for useful and ornamental purposes are illustrated in the specimens of furniture exhibited. The great futtocks for ship-building, yielded by the tamarisk tree, are likewise interesting. Timber constitutes a very prominent feature in the export commerce of the country; the white and red pine, the black walnut, maple, cedar, beech, and butter-nut, are among the more important. Among other articles of vegetable origin, the canoe, made of the bark of the white birch, will be regarded with interest. This fragile vessel has in safety made a voyage of three thousand miles, carrying a crew of twenty passengers, with their provision and other necessaries.

The agriculture of the country is largely represented. The specimens which appear in this capacity are in themselves without general interest, consisting of such articles as barrels of wheat, flour, &c.; but regarded in connection with the productive resources of the country from whence they have proceeded, they are not behind more pleasing objects in their value and attraction. The Canadian winter pastime of sleighing is illustrated by the elegant single and double sleighs sent to the Exhibition. Among the manufactures of another kind are specimens of dressed porpoise-skin and whale-skin, employed as a substitute for leather with advantage. In a comparatively new country like Canada, the manufacturing arts are still in an early stage of their development. At present her supplies of colonial produce and manufactures are derived from the mother-country: the specimens of domestic manufacture sent over to the Exhibition show the progress Canada is making in those arts; whilst the development of her great national resources is the first aim of her inhabitants. It is not, therefore, to be expected

that much attention can be given to arts that are yet in their infancy. Still the specimens sent will convey to the English artisan an idea of the field there is for the exercise of his calling. The blankets, horse-cloths, and grey *etoffe du pay*, will bear comparison with those of any country.

Among other miscellaneous objects, a piano, manufactured of Canadian woods, specially fitted to endure the changes induced by the vast change of temperature in this country, will be regarded with attention, as will also a church bell forwarded from Montreal. A very prominent object exhibited is a handsome fire-engine of great power. The alarming nature of the conflagrations occasionally breaking out in Montreal renders the possession of powerful means of extinguishing them highly necessary. This engine is capable of throwing two streams of water to a height of 160 feet each. A number of native curiosities adds to the value of this collection.—R. E.

1 LOGAN, W. E. (Director of Provincial Geological Survey)—*Montreal*.

Specimens of magnetic specular and bog-iron ores:—  
Ilmenite and titaniferous iron.

Sulphurets of zinc, lead, copper, nickel, and molybdenum.

Native silver and gold.

Bog manganese.

Iron pyrites.

Uran ochre.

Cobalt bloom.

Chromic iron.

Dolomite and magnesite.

Iron ochres, barytes, and other stone paints.

Lithographic stone.

Agate, jasper, Labradorite, and ribboned chert.

White quartzose sandstone, for glass-making.

Soap-stone, asbestos, plumbago.

Phosphate of lime, gypsum, and shell marl.

Millstone rock, whetstones, and Tripoli earth.

Roofing slates, granite, serpentine and various qualities of marble and limestone.

Peat petroleum and mineral pitch.

[The variety and importance of the minerals of Canada claim a more extensive notice than can usually be given. They have but recently become known; and with a view to promote a collection of them for the purposes of the Exhibition, the Executive Committee of the Canada Commission, last year, prepared a catalogue showing the localities of many of them; and from this, and the various published reports of the progress of the Canada Geological Survey, which has now been in operation under provincial authority for seven years, much information may be obtained. The country abounds in the ores of iron, consisting of the magnetic and specular oxides, and the hydrated peroxide or bog ore. The first occurs chiefly in a formation consisting of gneiss interstratified with important bands of highly crystalline limestone, and the formation sweeps through the province from Lake Huron to Labrador, keeping, at a variable distance, north from the left bank of the river St. Lawrence and its lakes, crossing the river at the Thousand Islands only, below Kingston, to form a junction with a great peninsular-shaped area of the same, occupying a mountainous region in northern New York, between Lakes Champlain and Ontario. The ore appears to lie in beds running with the stratification usually highly inclined, and the beds occasionally attain a great thickness. A bed which is now worked in the township of Marmora, and of the iron resulting from which samples have been sent, presents a breadth of 100 feet; another, the ore of which has been

mined and smelted in Madoc, has been traced several miles with a breadth of 25 feet; on Myers' Lake, in South Sherbrooke, there is a 60-foot bed; in South Crosby, a bed 200 feet in width comes upon the Rideau Canal, where it is not far removed from great water-power; and in Hull there is a 40-foot bed at no great distance from the navigable water of the river Ottawa. From all these localities, and others, specimens have been contributed, and the produce of the ore in pure metal generally ranges from 60 to 70 per cent.; that of South Sherbrooke is 63, and of Hull 69 per cent. Where the mineral has been acted on by the weather, it frequently breaks up with facility into grains related to the forms of the crystals of the magnetic iron ore, and may be easily ground and separated from earthy impurities by means of a machine in which the action of the magnet is made available. A portion of the Hull bed is in this condition; and of this bed every fathom in length by a fathom in vertical depth, taking the breadth at one-half only of what it appears to be, would produce between 50 and 60 tons of pure metal. Wood for fuel is in abundance near all the localities.

Specular iron ore appears to belong to the same geological formation; and a valuable and important bed of it occurs in the township of Macnab. It is 25 feet thick, and containing 58 per cent. of pure iron, the produce of the bed would not be under 50 tons of metal for every fathom forward by a fathom vertical; but though within a mile of the navigable water of the Ottawa, where steam-boats daily pass, and but 300 or 400 yards removed from a cascade on the river Dochart, giving ample water-power to drive machinery, the bed has never been touched for available purposes. Specular iron ore occurs also on the north shore of Lake Huron; but it is here in a formation which succeeds the gneiss, consisting of quartz rock, slates, and trap, and is noted as belonging to part of the copper-bearing region of the province.

Bog-iron ore exists in large quantities in both sections of the province. In Western Canada it prevails in the county of Norfolk, where it has been used to supply the wants of the Normandale Iron-works. It occurs in many places in the valley of the Ottawa, and specimens of it have been sent from Vaudreuil, Stanbridge, Simpson, Rivière du Chêne, St. Maurice, Portneuf, St. Vallier, and other parts, where in general it yields upwards of 50 per cent. of pure metal. That of Vaudreuil, within a short distance of the navigable water of the Ottawa, yields to analysis 76.95 per cent. of peroxide of iron, equal to 53 per cent. of pure metal, and the deposit is represented to be four feet thick. At the Forges of St. Maurice, near Three Rivers, this species of ore has been used for upwards of half a century in the manufacture of iron. The cast stoves from it bear a high character through the country, being less liable to crack than the imported ones; and specimens of the wrought iron produced there have been sent to the Exhibition. The quality of the metal, wood charcoal being the only fuel used, bears a comparison with that of Sweden, and it is to compete with this that it is manufactured.

The geological formation which abounds in magnetic yields also titaniferous iron, the composition of which, at St. Urbain, in Bay St. Paul, below Quebec, is—

|                              |       |
|------------------------------|-------|
| Oxide of titanium . . . . .  | 48.60 |
| Protioxide of iron . . . . . | 37.06 |
| Peroxide of iron . . . . .   | 10.42 |
| Magnesia . . . . .           | 3.60  |
|                              | ----- |
|                              | 99.68 |

This result is sensibly the same as that obtained by Rose for the titaniferous iron ore from Ilmenite, in the Urals, to which he has given the name of Ilmenite. One of the masses is 90 feet wide by a visible length of 300 feet; in some parts it consists of an admixture of ilmenite and rutile; and if the consumption of the compounds of titanium in the arts should increase, the localities of Bay St. Paul might be made to furnish an inexhaustible supply. Titaniferous iron ore occurs also on the south side of the St. Lawrence, in what are termed the Eastern Townships, through which runs a continuation of the Green Mountains of Vermont. The prolongation of this range into Canada is composed of rocks belonging to the lower Silurian age, and there presents a crystalline condition from the metamorphic action of heat, displaying chloritic and talcose slates, serpentine and other magnesian forms: beds of iron ore, in general more or less magnetic, are frequently repeated among them by undulations; they prevail in the townships of St. Armand, Sutton, and Brome, where many occur varying in breadth from 2 to 15 feet, and in produce of pure iron from 20 to 50 per cent. One of 45 feet width, occurring in serpentine, in the seignory of Rigaud Vaudreuil Beauce, is a mechanical mixture of about two-thirds magnetic iron, and one-third ilmenite; and when the ore is reduced to a powder these are readily separable from one another by means of a magnet. But in general those beds which occur in the chloritic slate of St. Armand, Sutton, and Brome, contain a variable but much smaller proportion of titaniferous iron; and several of them have been mined, and their ores advantageously transported, by land distances of 30 and 40 miles, to smelting establishments in the State of Vermont, for the manufacture of iron. Though wood abounds in the district, none of the ores have been turned to smelting purposes in Canada.

Lead ore is met with in several parts of the province. It occurs in veins, cutting the stratified gneiss and limestone already mentioned, where the veins intersect the calcareous part of the formation, and in this relation it exists in Bedford, Bastard, and Fitzroy. In Bedford several of these veins, varying in breadth from two to four feet, have been tried, and small pits sunk upon them; but none of the mines are at present in operation. The ore occurs also in the succeeding formation, associated with copper, on the Canadian shores of Lake Superior; and in Gaspé, it is met with in Indian Cove in transverse veins, cutting a still more calcareous deposit of the upper Silurian age. As this rock is supposed to be the equivalent of the great lead-bearing formation of Wisconsin, galena may probably be expected, where the rock is found in a disturbed condition in Canada, and cut by dislocations, thereby affording an opportunity for the occurrence of lodes. The rock presents these conditions in Gaspé, but it has hitherto been but little examined. With the exception of some of the specimens from Lake Superior, silver has not been found to accompany the lead ore.

Zinc ore occurs, associated with copper and silver, on Lake Superior; but the quantity met with has not yet been sufficient to promise a profitable return.

Belonging to a formation which is interposed between the lower Silurian rocks and the gneiss, an extensive copper region occurs in Canada. From the boundary of the province at Pigeon River, it ranges along the northern and eastern shores of Lake Superior, and the north shore of Lake Huron, for a distance exceeding 400 miles. On Spar Island, in Prince's Location, a 44-foot lode, holding vitreous copper in a gangue of calc-spar, barytes, and

amethystine quartz, cuts clay slates overlaid by greenstone trap, and yields, on the average, about 7 per cent. of pure metal. On several islands of the Archipelago, which separates Neepigon Bay from the main body of Lake Superior, native copper occurs; and on St. Ignace Island, which is the largest of them, a vein of about 2 feet, running with the stratification, has been traced the whole length of the island. Fine specimens of native copper were obtained by sinking a shaft on this lode. Many of these specimens were beautifully crystallized; vitreous copper often accompanying the native. Native copper occurs also in Michipicoten Island; and the formation of this island, and of the islands of the Neepigon archipelago, consisting of greenstone and amygdaloidal trap, interstratified with sandstone and conglomerate, is in every respect the same as that of the *Cliff*; and other mines on the south side of the lake, celebrated for the large masses of native copper which they have produced. At Mica Bay and Mamainse, the vitreous and yellow sulphurets, as well as the native copper, have been obtained. On the north shore of Lake Huron the prevailing description of copper ore is the yellow sulphuret, and the veinstone is usually quartz. The prevailing rocks of the country are greenstone trap, slate, and quartz rock, interstratified with one another; and it is in places where the lodes cut the greenstone that they become most productive, while they are least so in the quartz rock. Although lodes exist in several parts, it is only those of the Bruce mines that have been worked to any extent. In July, 1848, on a close examination of the lodes by the geological survey, a length of 300 fathoms, with a depth of 10 fathoms and a breadth of 4 feet, gave an average of 6½ per cent. of available pure metal; and 1,475 tons of vein stuff on the surface, as it had come from the lode, then sampled, gave 8 per cent. The ore has sometimes been dressed to 23 per cent., and generally to between 15 and 20 per cent., at which produces several hundreds of tons have been sent to Boston; and 200 tons, of 15½ per cent., intended for Swansea, are now in Montreal. Smelting works have been established at the Bruce mines, and a cargo of tough cake copper shipped to the United States, one of the cakes of which has been sent to the Exhibition as a sample. The furnaces are of the reverberatory description, and the fuel used is bituminous coal, obtained at Cleveland, on Lake Erie. Wood abounds in the vicinity of the mines.

The yellow sulphuret of copper occurs at the Wallace mine location, near White Fish River, to the eastward of the Bruce mines, in thin strings, supposed to be leaders to some main lode not yet discovered; and these are worthy of notice, from the fact that sulphuret of nickel accompanies the copper, disseminated in patches, and the nickeliferous part of the ore, when freed from earthy impurities, is found to contain 13 per cent. of pure nickel; traces of cobalt accompanying the nickel.

Copper ore occurs in the metamorphic rocks of the Eastern Townships in Upton, associated with silver, and in Ascott with silver and gold; but the quantity does not yet appear in any instance to hold out much prospect of a profit. Silver is associated with the native copper of Michipicoten and St. Ignace Islands. Native silver is also met with in small quantity accompanying the vitreous copper of Spar Island, on Prince's Location; and there is present also with it a trace of gold: cobalt occurs with them in small quantity, in the form of cobalt bloom. The lode on this location can be traced from the island to the main shore, and it then gives larger indications of silver, which is occasionally met with, associated with

blende, in thin leaves, following the cleavage joints and other crevices in the calcareous spar of the gangue. A pocket of this description, containing about 4 cwt. of good ore, gave an average produce of  $3\frac{1}{4}$  per cent., or 72 lbs. of pure silver to the ton of rock, and the commercial value of the ore in London was given at 330*l.* per ton. Want of capital has prevented the present proprietors from prosecuting their researches; but samples of the ore, and silver smelted from it, are exhibited.

Native gold exists in the drift of the Eastern Townships, along the south-eastern side of the Green Mountain range. Its presence has been ascertained, by the investigations of the geological survey of the province, over an area comprising between 3,000 and 4,000 square miles, with a breadth of about 40 miles, from the seignory of St. Mary on the Chaudière to within 6 miles of the province line on the Kennebec road, and a length of 90 miles, from Etchemin Lake, in Cranbourne, to the vicinity of Lennoxville. It appears to be very generally disseminated in the clay and gravel of the district, but so thin as to promise little, except in occasional patches, where the drift having been washed by the action of various streams, which have worn their channels in it, the metal has been concentrated, and remains caught by the cleavage joints and various cracks and crevices of the clay slates which form the country. The localities where small quantities have been met with are too numerous to be mentioned; but selected specimens from the workings of the Chaudière Mining Company, on the Touffe des Pins, in the seignory of Rigaud Vaudreuil Beauce, have been sent to the Exhibition, weighing from a few grains to a quarter of a pound, and smaller pieces from other localities from the museum of the geological survey.

The rocks and minerals in the range of the Green Mountains, flanking this auriferous deposit, are such as are usually met with in other countries where gold occurs; and one among the minerals is chromic iron. Beds of this, of 12 to 14 inches thick, exist in serpentine, in Bolton and Ham, and yield 45 to 50 per cent. of oxide of chromium. Specimens of the ore are exhibited from both localities.

Important veins of iron pyrites occur in the seignory of Terborne and that of La Norraye and Dautraye. Wad, or bog manganese, is met with in several parts of the Eastern Townships, and traces of uranium in Madoc.

Many of the rocks and earthy minerals are worthy of attention as commercially valuable. A pure white dolomite, with 45 per cent. of carbonate of magnesia, exists in great abundance on Mazinaw Lake and in various parts of the Bathurst district in Western Canada, from which specimens are exhibited from Burgess and Blythfield. It exists also in the Eastern Townships of Lower Canada; but it is there associated with the more important rock magnesite, serving the same purposes, and containing 83 per cent. of the carbonate of magnesia. This is found in large quantities in the townships of Sutton and Bolton. Of stone paints, barytes occurs in large quantity in veins on Lake Superior, and in smaller in Bedford and Bathurst; and there exists a great abundance of iron ochres, giving various beautiful tints, allied to Sienna brown. Of these there are contributions from five different parts of the lower province. Lithographic stone, in beds of 1 to 2 feet thick, is found at Marmora, and appears to range all the way to Rama on Lake Simcoe, a distance of 70 miles. Stones of all ordinary sizes might be obtained, but no quarry has yet been opened on the beds. The specimens contributed are from Marmora, and the largest is 24 by 16 inches and 3 inches thick.

Of materials used for jewellery, agates abound on Lake Superior, on the islands of the Neepigon archipelago, and Michipicooten island; a 6-foot bed of jasper occurs at Sherbrooke, and jasper pebbles on the shores of Lake Superior and in Gaspé. Two beautiful descriptions of ornamental stone, which have been called perthite and peristerite by Dr. Thompson, but appear to be species of labradorite and aventurine, occur in Bathurst. White quartzose sandstone, fit for glass-making, exists in various parts of the province, and glass is manufactured from it at Vaudreuil and St. John. Plumbago is met with in veins of a workable size at Grenville; asbestos in abundance in Dalhousie; and large beds of pure soapstone prevail in the Eastern Townships in Potton and Bolton. Its sectile and refractory nature render it well adapted for furnace linings, stoves, baking-stones, and other forms into which it is manufactured in the neighbouring states; but though it is imported into Canada in various shapes, none of the native quarries are yet resorted to for economic purposes, with the exception of its application as foot warmers for winter journeys. The material being a slow conductor, a slab of it heated, enveloped in a blanket and placed in the bottom of a sledge under the feet, will ensure a comfortable degree of warmth to the traveller for a long distance.

The province is not deficient in mineral manures. Phosphate of lime occurs in large crystals, thickly disseminated in carbonate of lime, in extensive beds in Burgess, from which several specimens are exhibited, and in Westmeath and Hull. Gypsum prevails in flat conical masses of acres in extent, in a formation which runs along the course of the Grand River from Cayuga to Dumfries, and is mined in various places: ground at various mills it constitutes a considerable article of trade for agricultural purposes. Large blocks are exhibited from four localities in the valley of the Grand River. Shell marl is a very abundant production in numerous parts of both sections of the province. It occurs in the bottoms of ancient and of existing fresh-water lakes, and being a result from comminuted shells, is a nearly pure carbonate of lime. In four or five small lakes near New Carlisle, on the Bay Chaleur, it is composed of the calcareous remains of microscopic testacea; and, being as fine and white as flour, it has been purchased by chemists for their purposes.

Various rocks of the country, such as granite and whitish trap, and beds of silicious conglomerate in a formation called the Potsdam sandstone, afford native millstones, which are in use in many parts of the province. A rock called the gray band, at the top of the lower Silurian group, gives grindstones in Esquecing and other parts, and whetstones have been manufactured from bands of talcose slate in Madoc, Stanstead, Hatley, and Shipton. Tripoli earth, resulting from a silicious infusorial deposit, is obtained from the seignory of La Norraye and Dautraye, and from the clay cliffs in the vicinity of Montmorency. Roofing slates have been quarried in Frampton, and they occur in still untouched ground in Kingsey and Halifax, and in great abundance on the Rivière du Loup above its junction with the Chaudière. Good flagstones abound in the vicinity of Toronto and in the Eastern Townships. The chief part of the building stones of the province are of a calcareous quality, and they have been extensively used in the construction of the locks of its various ship and barge canals and the best houses of the principal cities. In the western part of the province, what is geologically

called the oorniferous limestone formation, yields good stone at Amherst. The Niagara limestone, running from the great falls of that name by the upper end of Lake Ontario to Cabot's Head and the Manitoulin Islands, has been extensively worked at Thorold for the purposes of the Welland Canal, and some of the structures of Toronto. Beneath this limestone the sandstone of the gray band, already mentioned, affords excellent building stone at Hamilton. To the eastward, the Trenton limestone yields good building material from Lake Simcoe to Kingston, and from Brockville to Vaudreuil. The same formation is resorted to from Bytown to Montreal, where it has been very extensively used for the best edifices of the city; and it is also available in many parts between Montreal and Quebec. A sandstone, which underlies this, geologically designated the Potsdam formation, is quarried for building purposes at Beauharnois and several places near the mouth of the Ottawa. A beautiful white granite of superior quality for building purposes, splitting into rectangular forms, is obtained in many parts of the Eastern Townships, south of the Green Mountains. A block of this from Stanstead is exhibited. Various useful qualities of marble are obtained in Macnab, and at Grenville, Phillipsburgh, St. Dominique, and other parts; and a band of serpentine has been traced 135 miles through the Eastern Townships from Potton to Cranbourne, which promises a great variety of material suitable for ornamental architecture, but as yet no quarries are opened on it.

Peat occurs in some abundance in the flat country on the south side of the valley of the Ottawa, and in a similar district on the south side of the St. Lawrence; and specimens of it from St. Dominique, having been experimented on and analysed, show it to be a good fuel: it contains—

|                           |       |
|---------------------------|-------|
| Fixed carbon . . . . .    | 29.57 |
| Ashes . . . . .           | 6.75  |
| Volatile matter . . . . . | 63.68 |

100.

Petroleum is met with in springs in the Gaspé district, on Silver Brook, a small tributary of the River St. John, and at the mouth of this river; and naphtha is collected on the Thames River at Mosa. A bituminous deposit, in the form of mineral pitch or mineral caoutchouc, occurs in Enniskillen, in a bed of about 2 feet thick, and it is said to extend over several acres. Bituminous shale, such as is used in England for the distillation of naphtha and other products of the kind, occurs in Bosanquet, Zone, Collingwood, Port Daniel, and other places.

A great number of the mineral springs of the province have been analysed. The chief part of those of a saline character contain bromine and iodine, and some of them have traces of baryta. A copious spring in the township of Charlotteville, not far removed from Port Dover on Lake Erie, yields nearly twice the quantity of sulphuretted hydrogen contained in the celebrated Harrowgate water; and another near Brantford, with three more in the same vicinity, holds free sulphuric acid.—W. E. LOGAN, *Director of the Geological Survey of Canada.*]

2 WILSON, Dr. J., *Perth.*

Magnetic iron ore, from South Sherbrooke.  
Phosphate of lime, from Burgess.  
Dolomite, from Dalhousie.  
Serpentine, from Burgess.  
Perthite, peristerite, and graphic granite, from Bathurst.

3 DICKSON, Mr. Sheriff A., *Packenham.*  
Specular iron ore from Macnab.

4 MARMORA IRON COMPANY, *Marmora.*  
Pig iron, smelted at their furnace, from the magnetic ore of the township.

5 FERRIER, Hon. J., *Montreal.*  
Bars of axe iron; square of bar iron; folded iron, cold; twisted iron; horse-shoe iron; ploughshare; pig of Marmora iron.  
Collection of minerals. Specimens, gypsum; specimens, geological; specimens, shell-marl.

6 LANCASTER, —, *Vaudreuil.*  
Specimens of bog-iron ore, and phosphate of iron.

7 PROULX, J., *St. Eustache.*  
Specimens of bog-iron ore, from Rivière du Chêne.

8 MARCOTTE, F., *Portneuf.*  
Specimens of bog-iron ore.

9 MORIN, Captain, *St. Vallier.*  
Specimens of bog-iron ore.

10 MONTREAL MINING COMPANY.  
Copper ore, from Bruce mines, Lake Huron, and tough cake copper, smelted there from the same. Native copper and silver, from St. Ignace Island, Lake Superior.

11 BADGLEY, J. F., *Montreal.*  
Silver ore, from Prince's Location, Lake Superior; and smelted silver from the same.

12 CHAUDIÈRE MINING COMPANY, *Quebec.*  
Specimens of native gold, from the workings of the Company on the Touffe des Pins, seignory of Rigaud Vaudreuil Beauce.

13 CLAUSSEN, CHEVALIER, *London.*  
Labradorite, from Labradore, &c.

14 HARWOOD, Hon. —, *Vaudreuil.*  
Specimens of black-lead from Grenville.

15 BOUDOIN & LEBRE, *Vaudreuil.*  
Specimens of white quartzose sandstone, such as is used in the manufacture of glass at Vaudreuil.

16 SEER, L. M., *St. Eustache.*  
Specimens of iron ochre.

17 LA BARRE, D. G., *Point du Lac.*  
Specimens of iron ochre.

18 HALL, J., *Melbourne.*  
Specimens of iron ochre, from Durham; and roofing slates, from Kingsey.

18A HERBERT, JOHN W., *Montreal.*  
Indian dress; a boudoir; pianoforte. Case of type.  
[This dress is made of cloth and ribbon cut with scissors, and sewn on with ravellings of the same material—a very difficult process. The dress consists of petticoat, jacket, and leggings, and is the costume of the chief's daughter of the Ojibbeway nation. It was entirely wrought by hand, in imitation of porcupine-work; it is all of purely Indian design and pattern. It was made and sent for exhibition by Mrs. J. H. McVey, of Potton, eastern township of Canada, who is the daughter of Charlotte Mono-nonce Kata-wa-beday, late hereditary chief of that nation, and the late Charles Oake Ermatinger, Esq., of Montreal.]



The pianoforte, of six and three-quarter octave, compass from C to G, is manufactured of woods, the growth and produce of Canada, under the superintendence of the exhibitor, an Englishman of twenty-three years' residence in the city of Montreal, by workmen who acquired the principal knowledge of their trade in the manufactory of the exhibitor, whose attention to the construction of pianofortes to stand the climate of Canada, was first caused by observing that European instruments generally were unsuited to the temperature. The instrument now exhibited, both in wood and manufacture, is found, by experience, best adapted to the climate. In forwarding it, the exhibitor's object is not so much with the view of competing with countries whose facilities for manufacturing pianofortes must be admitted to be very superior to a new country like Canada, but to show the rapid improvement of the colony, and its capabilities of manufacturing what is suited to the demands of its inhabitants; and also to direct the attention of European manufacturers of these instruments to woods, the growth and produce of Canada, suitable for such purposes. The case is made of free grain black walnut-tree, veneered with crotch of the same wood; the keys are of bass-wood, the top and bottom blocks of hard Canadian maple, sounding board of Canadian spruce, which the exhibitor, by experience, is enabled confidently to state is stronger grained and superior for sound to the European wood so generally in use. The ornamental carvings are emblematical of Canada.]

- |      |                                                                                                   |    |                                                                                                                                               |
|------|---------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 19   | CARON, E., <i>St. Ann, Montmorency.</i><br>Specimens of iron ochre.                               | 32 | DRUMMOND, JOHN, <i>Petite Côte.</i><br>Three barrels of spring wheat.                                                                         |
| 19A. | RAHN, C., <i>Toronto.</i><br>Specimens of dentistry.                                              | 33 | PROVINCIAL AGRICULTURAL ASSOCIATION,<br><i>Canada West.</i><br>Three barrels of fall wheat.                                                   |
| 20   | QUIGLEY, M., <i>Frampton.</i><br>Specimens of slates.                                             | 34 | GRAHAM, J., <i>Sydney.</i><br>Three barrels of fall wheat.                                                                                    |
| 21   | DUBERGER, G., <i>Murray Bay.</i><br>Specimens of iron ochre, from Ibberville, county of Saguenay. | 35 | PROVINCIAL AGRICULTURAL ASSOCIATION,<br><i>Canada West.</i><br>Three barrels of fall wheat, raised by Mr. Christie, of Dumfries, Canada West. |
| 22   | KELLY, R. W., <i>Gaspé.</i><br>Specimens of iron ochre and shell marl.                            | 36 | TITTEMORE, G.<br>Barrel of oats.                                                                                                              |
| 23   | YROMANS, ASA, <i>Belleville.</i><br>Specimens of shell marl.                                      | 37 | MUIR, A., <i>Hinchinbrooke.</i><br>Barrel of oats.                                                                                            |
| 24   | DE LESDERNIERES, P. T. C., <i>Vaudreuil.</i><br>Specimens of shell marl.                          | 38 | WATTS, R. M., <i>Grantham.</i><br>Barrel of oats.                                                                                             |
| 25   | BOSTON, Mr. Sheriff, <i>Montreal.</i><br>Specimens of shell marl.                                 | 39 | BOA, WILLIAM, <i>St. Laurent.</i><br>Barrel of peas.                                                                                          |
| 26   | BOUTILLIER, Dr., <i>St. Hyacinthe.</i><br>Samples of peat.                                        | 40 | LIMOGES, D., <i>Terrebonne.</i><br>Barrel of peas.                                                                                            |
| 27   | LOGAN, J., <i>Montreal.</i><br>Barrel of fall wheat.                                              | 41 | JONES, D., <i>Sydney.</i><br>Barrel of peas.                                                                                                  |
| 28   | ALLAN, JOHN, <i>Long Point.</i><br>Three barrels of wheat.                                        | 42 | LA MERE, Madame, <i>Montreal.</i><br>Barrel of beans.                                                                                         |
| 29   | WEESE, W. F., <i>Ameliasburgh.</i><br>Three barrels of spring wheat.                              | 43 | FISHER, JAMES, <i>Rivière des Prairies.</i><br>Barrel of horse-beans.                                                                         |
| 30   | DESJARDINS, P., <i>Terrebonne.</i><br>Three barrels of spring wheat.                              | 44 | BRIEN, J., <i>St. Martin's.</i><br>Barrel of yellow beans.                                                                                    |
| 31   | LAURENT, D., <i>Varennes.</i><br>Three barrels of spring wheat.                                   | 45 | FOURNIER, C., <i>Longueuil.</i><br>Barrel of beans.                                                                                           |
|      |                                                                                                   | 46 | BOA, WILLIAM, <i>St. Laurent.</i><br>Barrel of barley.                                                                                        |
|      |                                                                                                   | 47 | DESJARDINS, P., <i>St. Rose.</i><br>Barrel of buck-wheat.                                                                                     |
|      |                                                                                                   | 48 | SIMPSON, J., & Co., <i>Bowmanville.</i><br>Barrel of flour.                                                                                   |
|      |                                                                                                   | 49 | LINGHAM, THOMAS, <i>Thurlow.</i><br>Two barrels of flour.                                                                                     |
|      |                                                                                                   | 50 | TAILEY, V. P., <i>Thurlow.</i><br>Barrel of flour.                                                                                            |
|      |                                                                                                   | 51 | SQUAIR, R., <i>Bowmanville.</i><br>Two barrels of oatmeal.                                                                                    |
|      |                                                                                                   | 52 | FRENHOLM, E., <i>Kingsey, E. T.</i><br>Barrel of buckwheat flour.                                                                             |
|      |                                                                                                   | 53 | CANIFF, F. & T., <i>Thurlow.</i><br>Barrel of buckwheat flour.                                                                                |
|      |                                                                                                   | 54 | TRENHOLM, E., <i>Kingsey, E. T.</i><br>Barrel of Indian meal.                                                                                 |

- 55 RICHIE, A., *St. Laurent*.  
Barrel of Indian meal; ship-biscuit; crackers; Bologna sausages; Fletcher's candy; smoked hams; beef tongues, &c.  
[The agriculture of the Canadas is greatly influenced by the climate, and is necessarily of a peculiar character. During one-half of the year, the surface of the country is covered with snow and ice, and thus remains totally unproductive. The farmer is consequently constrained to select such plants, or varieties of plants, for his cultivation, as will perfect their growth in the brief summer of the country.  
When the ice departs, at about the end of April, vegetation commences, and proceeds with a rapidity unknown in our climate. In Upper Canada the seasons are not so severe as in Lower Canada, or the provinces of Nova Scotia and New Brunswick, and the spring sets in about a month earlier. The soil is also of a more fertile character; wheat, and indeed all the cereals, are produced in good quality, and in great abundance. The agricultural produce, however, of these colonies, is generally inferior in quality to that of more favoured climates, and the wheat being nearly all spring sown, does not command so high a rate in the markets.—J. W.]
- 56 SHAW, A., *Toronto*.  
Specimens of corn in the ear.
- 57 LOGAN, J., *Montreal*.  
Specimens of corn in the ear.
- 58 DESJARDINS, B., *St. Rose*.  
Barrel of flax seed.
- 59 FISHER, JAMES, *Rivière du Prairie*.  
Specimens of Siberian oil-seed.
- 60 UBARDEAU, S., *St. Anne*.  
Barrel of timothy seed (*Phleum pratense*).
- 61 M'GINN, T., *Montreal*.  
Barrel of timothy seed.
- 62 JEFFRIES, J., *Burodam*.  
Specimens of red clover seed and garden seeds.
- 63 SHEPHERD, G., *Montreal*.  
Various samples of garden seed.
- 64 SMITH, B., *Stanstead*.  
Bale of hops.
- 65 PENNER, J., *Lachine*.  
Bale of hops.
- 66 CENTRAL COMMISSION, *Montreal*.  
Samples of double refined and unrefined maple sugar.
- 67 BALES, JOHN, *York*.  
Specimen of double refined maple sugar.
- 68 PARKER, JOEL, *Hatley*.  
Specimen of maple sugar.
- 69 FISHER, ARTHUR, *Ascott*.  
Specimen of maple sugar.
- 70 BASTIEN, M., *St. Rose*.  
Specimens of flax.
- 71 GRICE, F., *Montreal*.  
Specimens of hemp and seed.

- 72 MACCULLOCH, Dr. J., *Montreal*.  
A fungus from the pine-tree, used in Canada as a tonic bitter. It is apparently a *plyporus* allied to the *P. Officialis* of the *Materia Medica*.
- 73 LEVEY, JOHN, *Montreal*.  
Roll of tobacco.
- 74 EGAN, JOHN, *Ottawa*.  
Plank of bird's-eye maple (*Acer saccharinum*).  
[The curled maple, so much resembling satin-wood, and the bird's-eye maple, so well known as an ornamental material, is met with where the common or sugar maple grows, but in general more on rocky ground. Sometimes they occur disseminated in single trees, and sometimes in patches of fifty or more. They occasionally are large enough to yield veneers of two feet in width; but the tree of smaller dimensions, up to 14 and 18 inches, are preferable. The large trees have often an unfigured part down the centre.]
- 75 REED & MEAKINS, *Montreal*.  
Planks of birch, cherry, pine, bird's-eye and curled maples, and butternut.
- 76 PARISAULT, J., *St. Martin*.  
Plank of chestnut.
- 77 PARISAULT, F., *St. Martin*.  
Planks of soft maple and beech.  
[The soft or sugar maple is not used to great extent in any manufacture, from being generally saved by the proprietors of the land for its yield of the material from which it takes its name. Hard maple is extensively used in the country for the manufacture of the best kinds of common furniture, and with black and red birch which are serviceable for the same purpose, is largely exported to the United States for similar objects. These three woods, also with beech, constitute the chief domestic fuel of Canada.  
Beech, in addition to its use as a fuel, affords a material for the manufacture of pyroligneous acid; and several establishments for its manufacture have lately been erected in the country. All the species of maple, birch, and beech, are spread over extensive areas in all parts of the province, and their presence is considered an undoubted mark of a good and fruitful soil.  
The butternut-tree is a sign of good dry land; and it grows frequently to a height of 12 feet. It forms one of the best materials for veneering in cabinet-work, for which it is much used, being liable to neither warp nor crack. When properly finished and stained, articles made of it can scarcely be distinguished from mahogany.]
- 78 DAVIS, J., *Simcoe, Canada West*.  
Plank of black walnut crotch.
- 79 HENSON, J., *Dawn*.  
Black walnut plank.  
Indian corn in the ear.
- 80 CENTRAL COMMISSION, *Montreal*.  
Ship-building crooks and futtocks.  
Planks and blocks—of birch; red rock elm; butternut; walnut and birch; birch and pine; bird's-eye maple; white oak; black walnut and pine; iron-wood; bass-wood and maple; soft and hard maple.  
Planks—of birch; ash; black walnut; curled ash; bass-wood; butternut; pine; tamarack; spruce; oak, &c.  
[The following description of the tree from which one

of these planks—that of black walnut—was cut, appeared in a local paper of the colony:—

“The first plank is 6 feet long and 3 feet 3 inches wide, perfect in every respect; the second plank is 4 feet long, 3½ feet wide. The length is 2 feet less than that required by the regulations: this, however, was unavoidable, for the piece has been cut to its present size for some time. The whole groundwork of this plank is a beautiful curl, traversed in every direction by large veins, which give it a very splendid appearance. The third is a veneer mounted, 4 feet long and 15 inches wide, sawn by hand from the same tree. The fourth are two magnificent crotches 5 feet long and nearly 3 feet wide. These, I am confident, would favourably compare with anything of the kind in the world.

“The colossal tree, the largest I think in this country, from which these specimens were obtained, stood in the valley of the Nanticoke, in the township of Walpole. The incidents connected with felling it and getting it into the mill are interesting. It was, I believe, in the winter of 1847, Mr. Fisher commenced operations by constructing a *shanty* for his accommodation while felling the tree and cutting it into logs. It appears almost incredible, but it is certainly the fact, that three men were busily employed a fortnight before the task was completed. The attack upon this giant of the wood was commenced about 10 o'clock A.M. by three first-rate axemen, who continued chopping that day and the next day till nearly night.

“I visited the spot shortly after: the place presented the appearance of a small windfall, so great was the quantity of timber which this huge tree crushed down in its fall. I took the dimensions of it, and if I remember correctly, they were as follow:—circumference at the ground 37 feet; 3 feet from the ground 28 feet: from this the trunk rose, tapering very little, to the height of 61 feet, when it divided into two trunks, the one nearly 6 feet in diameter, the other about 5 feet. These branches stretched up to an enormous height, reaching far above the humble trees of the forest. I could have no idea of the age of this tree, but from the smallness of the annual growths, particularly the latter ones, which were not distinguishable, I concluded it must be very old—perhaps two or three thousand years, and yet it evinced no symptoms of decay; there was not even the slightest hollow in the trunk. There were twenty-three logs in the tree, which made about 10,000 feet of timber: they would have made a much larger quantity; but, on account of the great size of some of them, they had to be hewn down considerably before they could be sawed.”

The woods of Canada are various, and some of them constitute very important articles in the commerce of the country. Among these are white pine and red pine.

The valley of the Ottawa is one of the great sources of these two species. The quantity that comes down that river is very large. The greater value of the red pine enables the lumberers to bring it from greater distances than the other, at the head of Lake Michigan; and the highest point on the Ottawa, at which it has been felled for commercial purposes, is 600 miles above Quebec, the shipping port. From this distance it requires two full months to convey the timber to Quebec; and any accident creating delay would keep it through the winter on the voyage. The highest point from which white pine is brought is 150 miles short of the other; and for the purposes of the voyage, both species are formed into enormous rafts, some of which may have a superficies of 80,000 feet. To pass down rapids it is often necessary to break up the raft into

cribs of about 10 logs each; and to obviate the difficulties of cascades, slides are constructed in many parts of the river. The largest white pine-trees of the Ottawa are used for masts, and are of sufficient measure to give planks of five feet in breadth, free from sap. The largest plank of this species is from the River Chaudière, and it measures 12 feet long by 3 feet wide, and 3 inches thick. The largest red pine-tree will give logs of about 18 inches square and 40 feet long.

White oak is another of the important commercial woods of Canada, and the chief growth is in the western part of the province. It is used in the province and elsewhere for ship-building purposes; and a form in which it is largely exported is that of staves for barrels and puncheons. One of the planks of this species sent to the Exhibition measures 26 inches in breadth.

Black walnut is a wood affording ornamented material for furniture and house-building, and is much used in Canada and the United States. The chief growth is in the western part of the province, from which it is imported largely to the United States, and its quantity is inexhaustible. For ornamental purposes, it is the crutch, at the junction of a branch with the parent stem, that is used, as in other parts the grain is straight.

Examples of the great beauty of the wood may be seen in the various articles of furniture which have been sent to the Exhibition.

The tamarisk-tree yields good material for ship-building purposes, being particularly serviceable for knees and ribs: a fine specimen of a knee is exhibited in the Trophy in the centre of the Building.

The bass or white-wood tree is also a mark of the best quality of land, and it is to be found in abundance in both parts of the province. It is much used in the panels of railroad cars, carriages, and sleighs; and for such purposes it is there considered preferable to mahogany. It is much used in the manufacture of pianos, and for the interior of cabinet-work, as well as for various domestic objects in the dairy and kitchen.

The cedar-tree, which grows to great heights, yields an excellent material for railroad sleepers, and all purposes where exclusion from the atmosphere is required. Under ground it will last for centuries. It grows always in swampy land.

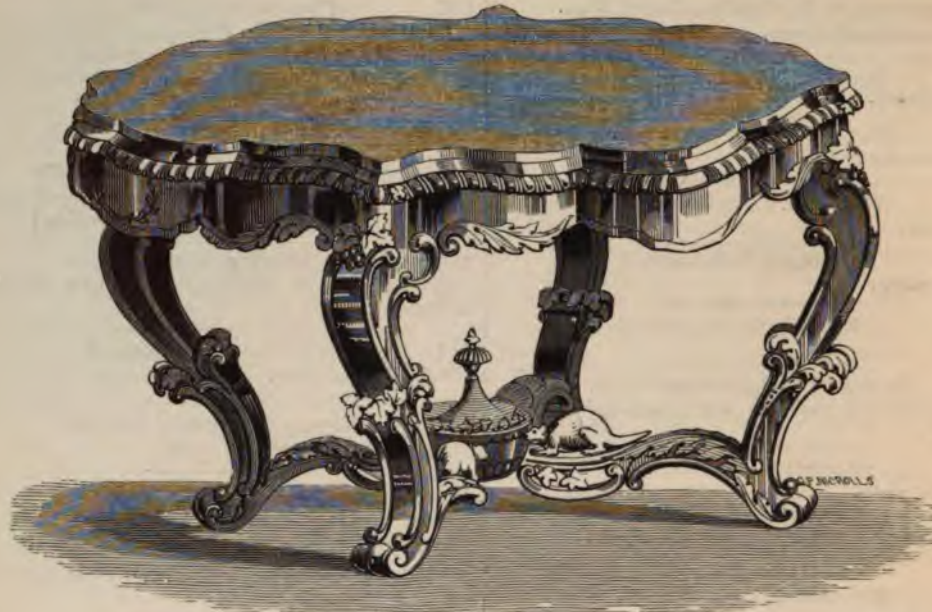
Cherry-wood, like maple and beech, is used for common furniture.

White spruce is exclusively used for the construction of dwelling-houses, and being closer in the grain, and more durable than most soft woods, it is employed for plank roads. It forms a considerable branch of trade, and is largely exported both to Europe and the United States. It grows in swampy ground, and the tree sometimes attains a great height, enabling it to be used for masts and spars.

The hickory-tree is scattered through most parts of the province, and forms an ornamental tree. The wood is very tough and straight grained. It is in consequence much used for handspikes, the handles of axes, of grain cradles, and various agricultural implements, and all others where strength is required to be combined with slightness. In the form of handspikes it is an article of export to Great Britain. Samples of it may be seen in the handles of the agricultural implements which have been sent to the Exhibition.]

81 CENTRAL COMMISSION, *Montreal*.  
Specimens of maple veneer. Cross of oak veneer, and black walnut veneer.

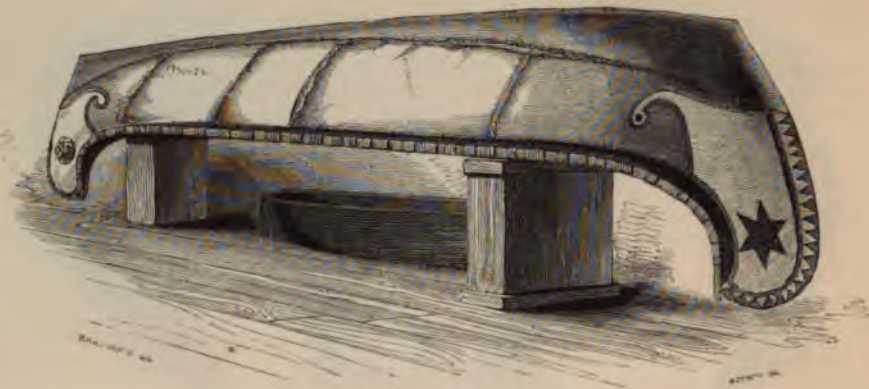
- 82 BRAINERD, O. N., *Hamilton, Canada West.*  
Corn-whisks and dusters.
- 83 BRAINERD, O. M., *Hamilton.*  
Corn-brooms.
- 84 NELSON & BUTTERS, *Montreal.*  
Corn-brooms and whisks.
- 85 WEESE, W. F., *Ameliasburgh.*  
A churn.
- 86 BAILEY, J., *Sherbrooke.*  
Several pails.
- 87 DODD, ROBERT S., *Ayr.*  
A tub.
- 88 SKINNER & M'CULLOCH, *Brookville.*  
Several pronged hay-forks and manure-forks; scythe  
smiths.
- 89 GLASSFORD, —, *Brockville.*  
A grain cradle.
- 90 SKINNER & M'CULLOCH, *Brookville.*  
Grain-cradles.
- 91 HULBERT, SAMUEL, *Presscott.*  
A plough.
- 92 FLECK, A., *Montreal.*  
A light plough.
- 93 CENTRAL COMMISSION, *Montreal.*  
A turnip cutter.
- 94 ALLOS, J., *Montreal.*  
Specimens of calf upper and harness leather; tanning  
materials.
- 95 McLEAN & CUMMINGS, *Chippewa.*  
Sides of sole leather.
- 96 MURRAY, H., *Montreal.*  
Calf skins and sides of upper leather.
- 97 TRONGATHASEA, P., *Quebec.*  
Specimen of moose skin.
- 98 TOURANGEAN, P.  
Specimen of tanned moose hide.
- 99 THOMPSON, THOS., *Three Rivers.*  
Pair of moose horns (*Alus Americana*).
- 100 ALLON, J., *Montreal.*  
Tanning materials.
- 101 HOLWELL, —, *Quebec.*  
A duplex safety rein.
- 102 DEAN, R., *Montreal.*  
A patent leather travelling trunk.
- 103 BELL, P. W., *St. Catherine.*  
An Indian saddle.  
[Used by the natives in the western country when  
engaged in buffalo-hunting.]
- 104 WARDLE, M., *Montreal.*  
Shoe-lasts.
- 105 M'GILLAN & SULLIVAN, *Hamilton.*  
Hunting-saddle.
- 107 HENDERSON, J., *Montreal.*  
Bear, wolf, and fox skin sleigh robes. These costly and  
superb articles of out-door covering or dress are worn by  
the upper classes of Canadians when travelling, during  
the winter, in their open carriages or sleighs.
- 109 TETU, C. A., *Quebec.*  
Dressed porpoise-skin, and whale-skin leather.  
[This is beginning to be much used in place of leather,  
for boots and shoes; it is softer, and as durable.]
- 110 BARBEAU, J., *Quebec.*  
Fishing-boots of deer-skin leather, with whalebone  
stiffeners.
- 111 DANGERFIELD, —, *Montreal.*  
Pair of ladies' shoes.
- 112 CENTRAL COMMISSION, *Montreal.*  
Long and short Canadian boots.
- 113 MORRIS, R., *Montreal.*  
Set of double sleigh-harness.  
[This is intended for a double sleigh, showing the style  
in which the light Canadian horses are caparisoned when  
out on a sleighing excursion.]
- 114 MORRIS, JAMES, *Montreal.*  
A black walnut bedstead.
- 115 PATERSON, G., *Dundas.*  
Blankets and assortments of cloths.
- 115A REED & MEAKINS, *Montreal.*  
Chairs, sofas, chiffonnière, and black walnut centre-table.  
[The set of six chairs are carved in the style of the  
14th century: the coverings are worked by the ladies  
of Montreal, who intend them as a present for Her  
Majesty. The sofa and chiffonnière are in the same  
style; the latter has the arms of the city of Montreal  
carved at the back.]
- 116 LAPLAMME, M. A., *Montreal.*  
Oil-cloth patterns; floor and table oil-cloth.
- 117 RAMSAY & McARTHUR, *Montreal.*  
Painted mahogany table; imitation oak table; marble  
table.
- 118 HAMMOND, R., *Montreal.*  
A stone centre-table.  
[The material forming this table is the limestone of  
Montreal. Polished in a similar manner, it is much used  
for chimney-pieces and other ornamental parts in archi-  
tecture. It is the same stone as that of which the best  
edifices in the city are built.]
- 119 DUNN, W., *Quebec.*  
Embroidered chairs.  
[The seats of these chairs are embroidered in silk on  
leather.]
- 120 REDHEAD, THOMAS, *Montreal.*  
Black walnut office and drawing-room chairs.
- 121 ALLAN, WILLIAM, *Montreal.*  
Drawing-room chair.



Hiltons' Walnut Centre and Pier Table.

- 123 HILTON, J. & W., *Montreal*.  
Walnut centre and pier tables. (One of these tables is represented in the above engraving.)  
Spring-back sewing-chair.  
Various chairs. Two tête-à-têtes.  
[This furniture is manufactured of the finest black walnut which Canada produces; it is delicately carved, and the seats and backs are covered with gold and crimson damask.]
- 124 MACFARLANE, A., *Côte des Neiges*.  
Samples of glue.
- 125 PRENDERGAST, J., *Montreal*.  
Samples of starch.
- 126 ROBB, J., *Montreal*.  
Box of biscuits.
- 127 FLETCHER, JOHN, *Montreal*.  
"Maiden hair" syrup. Raspberry vinegar.
- 128 BRUNSDEN & SHIPTON, *St. Hilaire*.  
Potato starch.  
Preserved potatoes, for ships' stores, especially adapted for long voyages.
- 129 PARISAULT, JOSEPH, *St. Martin*.  
Beeswax.
- 130 LEVEY, J., *Montreal*.  
Samples of snuff.
- 131 LYNAM, HENRY, *Montreal*.  
Samples of honey.
- 132 PENNER, J., *Lachine*.  
Bottled cider.
- 133 GILLESPIE & Co., *Montreal*.  
A barrel of vinegar, made from wood.
- 134 STEWART, W., *Toronto*.  
Set of single sleigh harness. Made of patent leather, lined throughout with red morocco, and exhibiting a newly-constructed self-adjusting pad.  
Barrel of ship biscuits.
- 135 FITTS, ARBA, *Montreal*.  
Fancy biscuits.
- 136 FLETCHER, JOHN, *Montreal*.  
Samples of candy.
- 137 BEAN, SYMON HARTLEY, *Canada East*.  
Woollen counterpane; table-cloths.
- 138 DIXON, T., *Toronto*.  
Woollen counterpane.
- 139 GAMBLE, W., *Milton Mills*.  
Horse blanket; pieces of carpeting; assortment of blankets.
- 140 BARBER, Messrs., *Esquesing*.  
Samples of carpeting.
- 141 FORTIER, MOSES, *St. David*.  
Piece of linen.
- 142 BEAN, SYMON, *E. T.*  
Table-cloths.
- 143 WILLETT, Messrs., *Chambly*.  
Specimen of grey cloth.
- 144 MCKAY & Co., *New Edinburgh*.  
Specimens of grey cloth; dark and brown satinette of various kinds; silk sash.
- 145 HENDERSON, H., *Montreal*.  
Embroidered table-cloth.
- 146 PATTERSON, J., *Dundas Mills*.  
Six pairs of blankets. An assortment of woollen cloths.
- 147 WALLACE, A., *Montreal*.  
Bench and moulding planes.





132.

A CANOE OF BARK, FROM MONTREAL.



133.

THE CANADIAN TIMBER TROPHY, SURMOUNTED BY A CANOE OF BARK.

- 148 SCOTT & GLASSFORD, *Montreal*.  
A chopping-axe.
- 149 SHAW, SAMUEL, *Toronto*.  
Chopping-axes; broad axes; coopers' tools; framing chisels; and hunting-axe.
- 150 LEAVITT, G., *Dundas*.  
Chopping and broad axes.
- 150A RICE, W. H., *Montreal*.  
Wire-cloth.
- 151 CHENEY, G. H., *Toronto*.  
A cooking-stove.
- 151A LADD, C. P., *Montreal*.  
Patent balance-scales to weigh 20 cwt.; various chopping-axes.
- 152 HOLLAND & DUNN, *Montreal*.  
Cut nails, assorted.
- 154 MOLSON, GEO. E., *Montreal*.  
A church bell.
- 155 CHENEY, G. H., *Toronto*.  
A sad-iron plate; case of types.
- 156 CHENEY, G. H., *Toronto*.  
A parlour stove.
- 157 PERRY, JAMES, *Montreal*.  
A copying press.
- 158 GARTH, CHARLES, *Montreal*.  
A steam-boat engine-gong.  
[This gong is used by the vessels in Canada in the following manner:—the gong, with apparatus, is used in the engine-room, and wires are placed from the sliding-bars which work the hammer, to the wheel-house paddle-boxes, or to any other part of the vessel: to these brass pulls are attached. Thus the captain or pilot can, by giving one or more pulls, inform the engineer whether he wishes the engine started, stopped, reversed, &c.]  
A brass double grease or oil cock, used for introducing grease or oil into the cylinder of steam-engines where high-pressure steam is used.  
A steam-boiler gauge-cock of improved construction.  
A 1-inch water-cock or valve. This water-cock is fast superseding all other kinds known in Canada.
- 159 CHENEY, G. H., *Toronto*.  
Copper furniture for a stove.
- 160 BOYD, F. J., *Montreal*.  
A cut rifle gun.
- 161 ASHFIELD, J., *Toronto*.  
A cut rifle gun.
- 162 BARTRAM, A., *Montreal*.  
A model cannon, &c.
- 163 DE MONTENAC, Madame, *Montreal*.  
City arms.
- 164 FERGUSON, W., *Montreal*.  
Flexible branch-pipes.  
[Made of bands of leather fastened together with copper rivets. It is much used in Montreal instead of the ordinary stiff pipe.]
- 165 CLARKE, JAMES, *Montreal*.  
Ship-blocks, of various sizes.
- 166 THRELKELD, —, *Toronto*.  
An assortment of whips.
- 167 WHEELER, THOMAS, *Toronto*.  
An assortment of brushes.
- 168 HENDERSON, —, *Quebec*.  
Coils of rope.
- 169 SPOONER, A., *Montreal*.  
Box of twine, assorted.
- 170 DIXON, THOMAS, *Toronto*.  
Specimens of cordage.
- 171 CENTRAL COMMISSION, *Montreal*.  
A bark canoe. (This canoe is represented in the accompanying Plate.)  
[This canoe, made from the bark of the white birch, is one of the largest class of canoes used in the north-west country. Previously to its being forwarded to England, it made a voyage in the spring of last year of upwards of 3,000 miles, with a crew of 20 men and their stock of necessaries and provisions. Being exceedingly light, the crews are enabled to carry these canoes when it is essential to avoid the falls and rapids; and, for months together, they form the homes of the hardy and daring voyagers during their transit to and from the Far West.]
- 172 ONDAGAHOUT, P.  
Pair of snow-shoes; also moccasins.  
[These snow-shoes are worn by all classes when traveling in the snow. They are used in chase of the deer and other game, by the Indians, and enable the hunter in his eager pursuit to travel over the snow at the rate of seven, and even occasionally at ten, miles an hour. Racing in them is a favourite amusement of both Canadians and Indians during the winter months; and so indispensable are they, that, without these shoes, the poorer inhabitants would be confined in stormy weather to their homes.]
- 173 BELL, P. W., *St. Catherine*.  
Indian dress, viz., coat, pair of leggings, cap, gun-case, knife-case, bracelet, and pair of small belts.  
[Formed of dressed deerskin, ornamented with dyed moose hair and beads. This dress is that of an Indian chief, made by a squaw of the Mohawk nation.]
- 174 HENDERSON, —, *Montreal*.  
Embroidered slippers, cigar-cases, purses, and fan.  
[Made by a tribe of the Iroquois Indians resident at Caughnawaya, in the neighbourhood of Montreal.]
- 175 ROCHELEAU, HELEN, *Three Rivers*.  
Bark box and fan.
- 176 CAMPBELL, Major, *St. Hilaire*.  
Bark tray and box.  
[Made of the bark of the white birch, ornamented with dyed moose hair and beads.]
- 177 INDIANS OF LORETTE.  
Indian curiosities.
- 178 M'LEAN & WRIGHT, *Montreal*.  
Single sleigh, with pole and shafts. This sleigh is represented in the following cut.





M'Lean &amp; Knight's Single Sleigh.

[This sleigh is drawn generally by four horses. Sleighting forms the chief and most highly-relished amusement of the Canadians during winter. To follow it all business is suspended; and certainly a more invigorating exercise can scarcely be imagined. Seated in one of these light and elegant carriages, wrapped in the warmest furs, ornamented with the gayest colours, and tempted abroad by a sky that equals that of Italy in brilliancy, the Canadian thoroughly enjoys himself, even though the thermometer sometimes be 30 degrees below the freezing point. It is no uncommon thing to see a score or thirty of these sleighs at one time careering over the frozen snow in the "fashionable drives."]

179 O'MEARA, M., *Montreal*.  
A double sleigh.

180 LAURIN, J. J., *Quebec*.  
A single sleigh. A light carriage and wheels.

181 PERRY, G. J., *Montreal*.  
Fire-engine and hose reel.

[The mechanical construction of this fire-engine differs entirely from the engines commonly used in England. Instead of working "broadside," or from end to end, this works from the ends. The usual stroke of an English engine is 8 inches: this gives one of 16 inches, while it may be worked with fewer hands, with greater facility, and consequently with less fatigue to the firemen, from 20 to 30 of whom are required to keep it in full working play; but by a simple and ingeniously contrived stuffing-box its powers may be regulated according to the number of men employed. The present engine lifts its supply of water 33 feet, playing from 50 feet of hose, one-inch bore 40 feet, and from 170 feet to 180 feet in height; or from two streams it will throw each 160 feet.]

(This engine is represented in the Plate 48.)

182 JOSEPH, J. G., *Toronto*.  
A theodolite and stand.

183 MCPHERSON, J. & SONS, *Montreal*.  
A clarinet and a cornopean.

185 HIGGINS, PATRICK H.  
Violin and case, clarinet, and piccolo piano.

186 PARKES BROTHERS, *Toronto*.  
Various specimens of turning.

187 HENDERSON, —, *Montreal*.  
Case of pipes, assorted.

188 MATTHEWS, C., *Montreal*.  
A lithotype.

189 PALSGRAVE, J. T., *Montreal*.  
Case of type.

190 MEYER, H., *Toronto*.  
A lithographic drawing.

191 STARKE & Co., *Montreal*.  
Ornamental letter-press printing.

192 BUREAU & MARCOTTE, *Quebec*.  
Specimens of plain and ornamental typography.

193 DICKINSON, C. M., *Montreal*.  
Specimens of dentistry.

196 IRWIN, J., *Montreal*.  
Travelling trunk.

[Indian curiosities, made by the native Indians of Lorette, the remains of the Herin tribe, consisting of black beaver and skin tobacco-pouch, card case of cunhboo feet, an Indian stool formed of moose feet, ornamented with dyed porcupine-quills and moose hair.]

244 LEWIS, R., *Melbourne*.  
Two model bridges.

301 CENTRAL COMMISSION, *Montreal*.  
Ornamental stool, moose feet. Spring-back sofa. Walnut centre tables. Walnut pick table. Spring-back sewing-chair, *tête-à-tête*. Chiffonnière. Sofa. Rocking-chair. Ordinary chairs. Wooden snow-shovels.

324 MANN, A., *Montreal*.  
Samples of mineral water.

326 NICOLSON, R., *Montreal*.  
Barrel of beef.

329 MATTHEWSON & SON, *Montreal*.  
Cases of fancy soaps, common soaps, and candles.

331 ADAMS, W. H. F., *Montreal*.  
*Ettoffe du pays* suit of clothes. The capote lined with Canada tweed, the buttons of bird's-eye maple: the whole intended to show a full suit of Canadian *habitan's* dress. A fancy double coat.

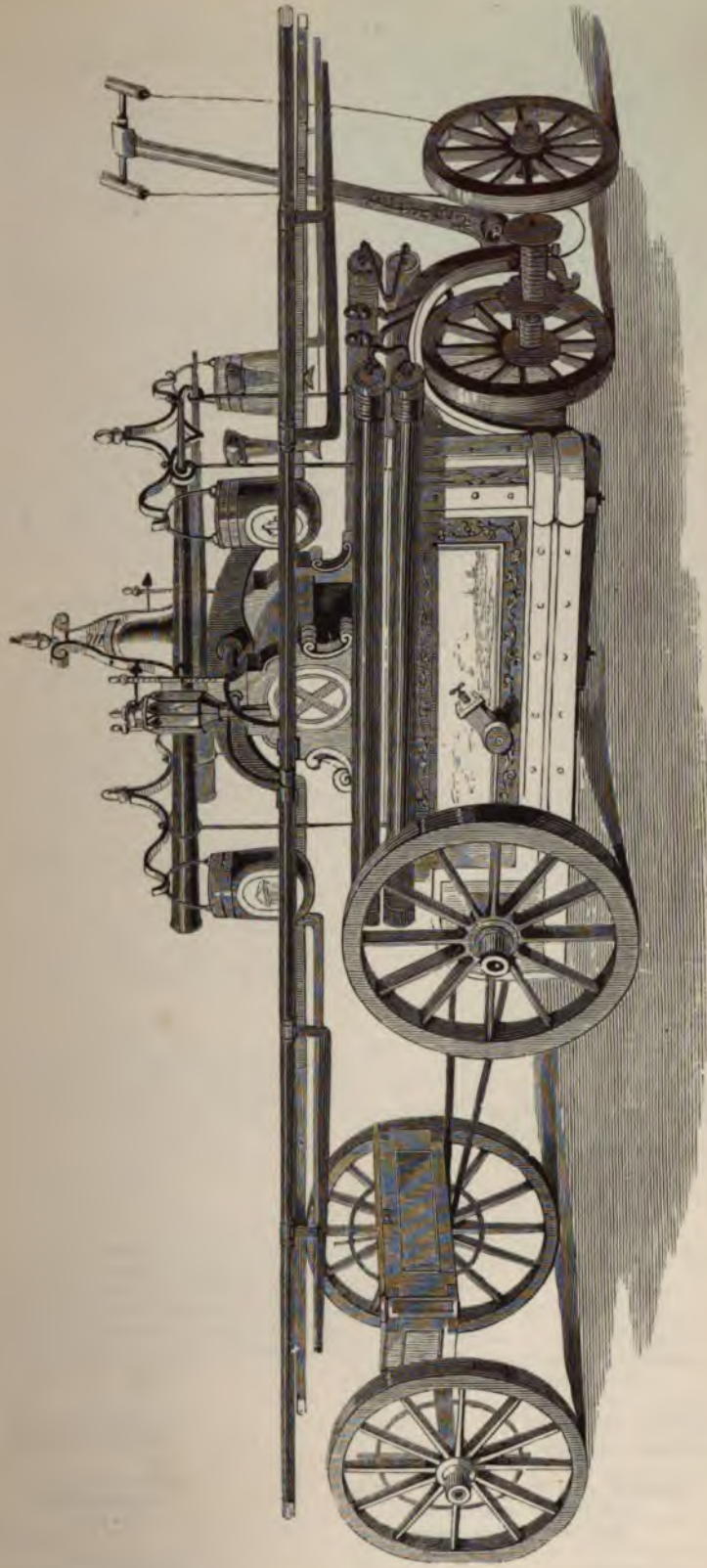
333A STEWART, —, *Toronto*.  
Set of single sleigh-harness, lined with red morocco, showing a self-adjusting pad.

334 MORRIS, R., *Montreal*.  
Military helmet. Proposed helmet of the Rangers, made for Sir James Alexander, A.D.C.; sabre-proof, the crest being stuffed with deer's-hair, and a band of whale-bone passing across the head: sun-proof, and ventilated. Weight 18 oz.

339 COMMISSIONERS, *Quebec*.  
Straw hats.

340 SAVAGE, G., & SON, *Montreal*.  
A silver embossed tea-kettle, and engraved spectacle case. Dessert and tea spoons. Silver table-spoon and fork.

341 LEGGATT, H., *Montreal*.  
Gold cable-chain and hook. A filigree and topaz brooch. An amethyst and a sprig brooch.



POWERFUL CANADIAN FIRE ENGINE. MESSRS. FERRY.



A snake-pin, garnet and pearl. A diamond pin. Claw-pin, ruby. Various other pins, including topaz, ball, dove, and square-head rubies.

346 RODIER, P., *St. Hyacinthe*.

A model locomotive steam-engine, gong, &c.; single sleigh; light carriage; carriage-wheels.

351 DUNCAN, J., *Montreal*.

Designs for coinage.  
Ornamental printing.

353 WHEELER, THOMAS, *Toronto*.

Medallion, in gutta percha, of the Earl of Elgin, Governor-General of Canada, and the die from which the same was struck.

355 ASHTON, J. P., *St. Laurent*.

Specimens of the *Cottonia* plant, or wild cotton.

[This plant grows in the greatest luxuriance over almost the entire country: it has been applied successfully in Canada to the manufacture of hats, being substituted for felt; and it is generally thought, that, were it to engage the attention of the maker of English textile fabrics, he might use it to a profitable purpose.]

## NEW BRUNSWICK.

### SOUTH AREA, Q. 32.

This colony has sent a miscellaneous collection of raw and manufactured articles for exhibition. The timber trade of New Brunswick is represented by a series of woods; the mineral wealth by some specimens as yet undetermined, and others of iron, and probably other metalliferous ores, in addition to grindstones and stones for hones. Specimens of coal and plumbago are also sent. The agricultural produce sent consists of wheat, barley, oats, beans, &c. There are also specimens of preserved food. It is to be regretted that a fuller amount of information was not supplied with these articles, as the capabilities of the colony might have been more adequately exhibited in the Catalogue of its contributions.—R. E.

1 GREY, The Dowager Lady.

A canoe, with three figures, representing Joseph Jamar, the chief of the Melicite tribe of Indians, his squaw and her popoose, in their state costume. Sent by the Misses Close, two ladies who reside in the vicinity of the tribe.

2 GIBBS, BRIGHT, & Co., *Liverpool*—Producers.

A figure-head of an Indian chief.

3 GOULD, N., 4 *Tavistock Square, London*—Importer.

Specimens of jet coal, or asphalt, recently discovered on the banks of the river Peticodiac, Albert County, New Brunswick, and not hitherto been discovered in any other part of British America. This coal is said to produce gas of the purest colour, and in greater quantity than any other coal hitherto used for the purpose. (The property of Edward Allison, Esq., of St. John's.)  
Lump of plumbago.

4 McRAE, WILLIAM.

Bird's-eye maple.

5 MCKILLOP, A.

Bird's-eye maple.  
Curly maple (vaneer).

6 McRAE, WILLIAM.

Curly maple.

7 MACKIE, ALEXANDER.

Black birch.  
Tausoganop stones, for razor hones.

8 McRAE, WILLIAM.

Manganese (from Nassau).

9 FRASER, WILLIAM J.

Mineral (from Bay Cheleur).

10 HUTCHISON, RICHARD.

Iron ore. Mineral.

11 McCULLY, CALEB.

Mineral (from Tabusintac).

12 BLACKVILLE.

White bald wheat.

13 WYSE, JOHN.

White bald wheat, 66 lbs. per bushel.

14 BLACKVILLE.

White bald wheat.  
White bald wheat, 66 lbs. per bushel.

15 WYSE, JOHN.

Red bald wheat, 67 lbs. per bushel.

16 BLACKVILLE.

White oats.

17 WYSE, JOHN.

White oats.

18 McDERMOT, FINLAY.

Barley, 56 lbs. per bushel.

19 BROPHY, PATRICK.

Black oats, 41 lbs. per bushel.

20 WYSE, JOHN.

Broad beans.

21 SEARLE, MICHAEL.

Black runners.  
Speckled beans.

22 WYSE, JOHN.

White beans.  
Two copies of Professor Johnson's "Report of the Agricultural Capabilities of New Brunswick."  
Sample of Indian corn.

23

Bay or candleberry candles. Iron ore.  
Cornelian stone. Pair of mittens.  
Candleberry wax.  
Sample of grindstone, from the New Baudon Quarry, Bay Cheleur.

24 FRASER, WILLIAM J.

Two canisters of preserved salmon.  
Two canisters of preserved lobsters.  
One canister of fresh cod-fish.

24 HUTCHISON, RICHARD.

Sample of peas, second growth, 1849.

26 SEARLE, MICHAEL.

Cabbage seed. Carrot seed.  
Farsley seed. Onion seed.

27 PORTER, J.

Bushel of beans, 68 lbs. per bushel.

- 28 **GOODFELLOW, ALEXANDER.**  
 Sample of white bald wheat.  
 Green peas, 68 lbs. per bushel.  
 Bushel of white beans, 68 lbs. per bushel.  
 Box containing bay or candleberry bush and sea-weed coral.  
 Sample of white bald wheat.

- 29 **CHALMERS, JOHN.**  
 Samples of barley, wheat, and oats.

## NOVA SCOTIA.

SOUTH AREAS, P. 30 TO 32.

THE mineral wealth of Nova Scotia forms the chief subject of illustration in this collection; and the objects exhibited prove the large extent and importance of the sources of iron of the best kind recently made available in that country. Charcoal iron is produced in considerable quantities, and is adapted for the manufacture of excellent steel. In addition to the metalliferous minerals, several others are exhibited of interest to the geologist and naturalist. The collection of stuffed birds and animals is also interesting, and is accompanied by specimens of native manufactures of the usual simple description.—R. E.

**GOULD, N., 4 Tavistock Square.**

Bitumen.

**ACADIAN IRON MINING ASSOCIATION.**

Iron, steel, tin plates, wire, cutlery, bars of iron and steel polished, pig and cast iron.

**ARCHIBALD, CHARLES DICKSON, F.R.S., 15 Portland Place—Proprietor.**

Iron ores from the province of Nova Scotia, embracing magnetic ores, specular, spathose, micaceous, ologistic, fossiliferous, hematites, hydrates, ochres, &c.

[A band of fossiliferous iron extends along the edges of the Nova Scotia coal-field from a few miles south of Pictou to Annapolis: this is usually in the state of peroxide. Ironstone balls, the argillaceous carbonate of iron, are also found interstratified with the numerous thin bands of coal of this district.—R. H.]

Manganese peroxide, black, grey, crystallized, and acicular.

Copper ores—carbonate, oxide.

Barytes—sulphate, crystallized.

Marble—statuary, veined, &c.

Ochres—red, yellow.

Ankerite—a ferruginous variety of limestone containing spathose iron ore.

Fossils.

Various building materials.

[The iron ores of Nova Scotia are of great richness and purity. Several of the specimens above mentioned yield upwards of 70 per cent., and are entirely free from sulphur and all other impurities. They are, moreover, very abundant, and situated in the midst of vast native forests, capable of supplying charcoal to any extent, at a very cheap rate. The principal mines are within four or five miles of ship navigation; and in juxtaposition with the ores are found coal, lime, marble, freestone, fine clay, timber, water-power, and every requisite for the manufacture of iron on a large scale. The great value of these ores consists in their being essentially of a steely nature. Not only does the iron produce steel of first-rate excellence, but large quantities of steel of very superior quality have been made direct from the ores. These mines have

been opened, and a small establishment of works put in operation during the last year. The mode of reduction adopted is what is called the Catalan process, by means of which the ores are directly converted into bar iron, with charcoal fuel.]

Specimens to illustrate the proposition, "That the province of Nova Scotia is capable of supplying the whole British empire with steel and charcoal iron, equal to the best foreign articles, and at greatly reduced prices." All the enumerated articles are made from the iron and steel of Nova Scotia. Iron—cast and pig, grey, mottled, bar, rod, steel iron, horse-nail, &c., manufactured; turned specimens, polished bars, tin plate, wire, dies, &c. Steel-bars, polished, wire, &c. Manufactured articles—fenders, fire-irons, sword-blades, knives, scissors, surgical instruments, magnets, pistols, files, edge tools, razors, &c.

Working models of a steam-engine, and of a brick-making machine.

ARTICLES exhibited by the CENTRAL COMMITTEE, consigned to the care of Mr. C. D. ARCHIBALD, *Portland Place.* Agent—Mr. MACLEAN, *Lobby, Custom-house.*

Geological prints on clay. Specimens of freestone. Yellow and burnt ochre. Mineral paints. Coal. A fossil-tree. Shell, marl, and lime. Iron ore, and other mineral specimens.

Samples of cod-liver oil. Chemical preparations.

Maple-sugar in crystals; pulverized; and in syrup.

Samples of wheat grown by Indians; and grown by the farmers; weight 64 lbs. 11 oz. per bushel.

Sample of maple-sugar. Preserved fish. Digby her-rings.

Barley, wheat, straw, and oats. Indian corn. Beef and ham, 90 lbs. Bacon, &c.

Specimens of woods: Curled maple, bird's-eye maple, veneered birch, grey and white oak, and lepidodendron stem.

Young seal-skins.

Specimen of human bones (Indian).

Samples of hay-seed, moose heads, and horns; cariboo.

Collection of botanical specimens.

Specimens of preserved animals, birds, and insects. The birds stuffed by Mr. Andrew Downs, of Halifax.

Skins of wild cat (*Felis catus*); lynx (*Felis lynx*); red, cross, black, silver, and white fox (varieties of *Fulpes communis* and *Fulpes lagopus*); American hare (*Lepus americanus*); martin (*Mustela marites*); minx (*Mustela lutreola*); raccoon (*Procyon lotor*); otter (*Lutra vulgaris*); beaver (*Castor Canadensis*); bear (*Ursus Americanus*); wolf (*Canis lupus*); weasel (*Mustela erminea*); squirrel (*Sciurus*); flying squirrel (*Pteromys volucella*); silver-grey fox, martin, musquash (*Nasua socialis*); raccoon, and cat-skin sleigh robes.

Two iron castings.

One Indian canoe and three paddles.

Sample of French home-spun grey, green, striped, and plaid cloth. Check home-spun, plaid cloth, and brown cloth.

Two shawls.

Quilts, blankets, woollen hearth-rugs, &c.

Woollen vest. Socks, assorted. Mitts, assorted.

Pairs of fine and coarse pegged boots.

Shoe-lasts. Snow-shoes with moccasins.

Grass bonnets and hats. Down hat, muff, victorine, and cuffs.

An Indian dress, cradle, chairs, seats, mats, cigar cases, and other Indian work.

Map of Nova Scotia and hand-book. Book of music.

Piano, in case of bird's-eye maple.

Soap and candles. Eel-spear and fishing-rods.

Indian fan, reticule, hood, purse, and moccasins.

Indian and negro bones and baskets.

Reticules of grass.

## NEWFOUNDLAND.

## SOUTH AREA, Q. 32.

THE cod-liver oil trade of Newfoundland has of late years undergone great extension, in consequence of the immense consumption of this drug for pulmonary and strumous disorders. The unquestionable instances of its successful employment give probability to the conjecture that the manufacture will receive still further increase. Cod-liver oil is used also by the preparers of leather. The inexhaustible cod fisheries off this country form in themselves a singular and interesting part of its natural history. The only contributions from Newfoundland are some samples of cod-liver oil.—R. E.

1 STABB, EWEN, *Liverpool Street, London*—Importer.

Samples of cod-liver oil, purified (of much efficacy in pulmonary complaints), from the manufactory of W. L. McKay, St. John's, Newfoundland.

## BERMUDAS.

## SOUTH AREA, R. 32.

THE contributions of the Bermudas are placed with those of other colonies on the south of the Western Nave. The collection from this remarkable group of islands is extremely small, and consists only of a few specimeus of arrow-root and palmetto plait, and some miscellaneous objects. As arrow-root and the plait of the palmetto leaf are of importance to the commerce of those islands, they will be regarded with some degree of interest as associated with their prosperity.—R. E.

GRAY, —.

Specimens of arrow-root.

JACKSON, H. H. *Bermudas*—Cabinet-maker.

Chess-board of remarkable workmanship, and exhibiting specimens of the Bermudas wood.

## SPECIMENS OF NATURAL PRODUCTIONS.

Pumice-stone.

Bermuda arrow-root.

Collection of marine productions.

Model of Bermuda sailing-boat.

Model of a hoop for a mast, for the boom to work in, instead of a "goose-neck."

Specimens of Bermuda palmetto plait.

[Arrow-root and palmetto plait form two important articles in the exports of this group of islands. The arrow-root is obtained from *Maranta arundinacea*, which is extensively cultivated in the islands, by first removing the scaly portions from the roots, and then rasping the latter and washing the powder. The fine powder obtained, after being properly dried, is packed in tins and other cases lined with paper, and exported. In 1845, it was estimated that 400,000 lbs. were made in these islands, three-fourths of which were sent to England. Bermuda arrow-root is one of the most esteemed varieties. The palmetto plait is likely to come into extensive use in this country, and is exhibited by several in a preceding Class.]

## JAMAICA.

## SOUTH AREA, Q. 30.

JAMAICA is directly represented by only one exhibitor. The contribution consists of artificial flowers in imitation of the gorgeous productions of the Tropics. The material employed deserves mention. It is obtained from one of the *Yuccas*, plants which are members of the natural order *Liliaceae*; and, being of tenacious fibre, are occasionally used in the manufacture of twine, rope, &c.—R. E.

NASH, Mrs., *Parish of Manchester*.

Ten varieties of tropical flowers, made from the fibre of the "Yucca" or "Dagger-plant."

## BARBADOES.

## SOUTH AREA, Q. 30.

A MOST complete collection of wax models has been sent from this island in illustration of tropical flowers, fruits, &c. To the naturalist, these models present a valuable opportunity for acquaintance of a more tangible character than is derivable from books, with the most valued of these productions. Among the specimens of natural produce are textile fibres, minerals, and medicinal substances, some of which are new and interesting. The sugar produced in the island is also represented by several specimens manufactured by different processes.—R. E.

MODELS AND SPECIMENS OF NATURAL PRODUCTIONS,  
FRUITS, SPICES, &c.

Cactus (*Cereus trigonus*). Dunks (*Ziziphus jujuba*). Purple peppers (*Capsicum purpureum*). Finger peppers (*Capsicum purpureum*). Sea-side grapes (*Coccoloba uvifera*). Otaheite gooseberry (*Cicca disticha*). Golden apple (*Spondias dulcis*). Pig plum (*Spondias dulcis*). Water lemon (*Passiflora laurifolia*). Rose apple (*Passiflora laurifolia*). Chili peppers (*Capsicum*). Cherry peppers (*Capsicum cerasiforme*). Cashew (*Anacardium occidentale*). Red bell pepper (*Capsicum annuum*). Green bonnet pepper (*Capsicum tetragonum*). Yellow Carib pepper (*Capsicum Caribæum*). Mango (*Mangifera indica*). Peach mango. Jamaica plum. Red bonnet pepper (*Capsicum tetragonum*). Star plums (*Chrysophyllum monospermum*). Green sugar apple (*Anona squamosa*). Purple sugar apple (*Anona squamosa*). Tamarinds. Cream-coloured peppers. Guavas. Green bell pepper (*Capsicum annuum*). Sapodilla (*Achras sapota*). Cocoa (*Theobroma cacao*). Limes (*Citrus acida*). Star apple (*Chrysophyllum Cainito*). Red banana (*Musa sapientum*). Yellow banana (*Musa sapientum*). Avocado pear (*Persea gratissima*). Citron (*Citrus*). Pomegranate. Custard apple (*Anona reticulata*). Bread-fruit (*Artocarpus incisa*). Sour sop (*Anona muricata*). Green plantain (*Musa paradisiaca*). Yellow plantain (*Musa paradisiaca*). Papaw (*Carica Papaya*). Grape-fruit (*Citrus*). Sugar-cane (*Saccharum officinarum*).

Fibre of Spanish needles.

Common and Gadesden pan sugar.

Gadesden pan sugar, from Vaucluse plantation.

The fibre of the Agave Americana, and of the Agave vivipara, used in Central America for stuffing hammocks.

The "Tous les mois," and wax model of its flower.

Barbadoes cotton. Aloes.

Plant of Spanish needles.

Bituminous coal.

Selenite. Limestone.

Nicker seeds, produced by the Guilandina Bonduac.

[These seeds are used as a remedy for dropsical affections, and are in great repute among the native practitioners of the island. They are sent to determine whether their virtue does not depend upon some alkaloidal principle.]

The mode of administering the "horse-nicker"—the vernacular name for the seeds—is to parch the kernel, and grind it; then to infuse it, like coffee, and give a wine-glassful or more two or three times a-day. It is thought that a concentrated form of the remedy would be very valuable as a tonic or diuretic.]

Specimens of transparent sugar-cane. Bourbon sugar-cane.

Blossoms of transparent and Bourbon sugar-cane.  
Persian or green seed cotton. The vine cotton.  
Cotton from Demerara. Common Barbadoes cotton.  
Chalk. Quartz. Petroleum, or green tar.  
The bulb of the "Tous les mois."

["Tous les mois" is a variety of arrow-root, produced by a species of canna.]

#### 1 READE, ALFRED, Director, Datchett.

Basket of vegetables, roots, &c., modelled in wax, by Mr. and Mrs. Braithwaite, of Barbadoes:—

Guinea corn (*Sorghum vulgare*). Pigeon peas (*Cajanus Indicus*). The Sugar-bean (*Phaseolus lunicus*). Moonshine bonavis (*Lablab leuocarpus*). Plantain (*Musa Paradisiaca*). Ginger (*Zingiber officinale*). Egg fruit (*Solanum melongena*). Arrow-root (*Maranta arundinacea*). Indian corn (*Zea mays*). Chrystophine (*Secchium edule*). Cucumber, Moonshine (*Cucumis sativus*). Purple egg plant (*Solanum melongena*). Cabbage. Turnip. Carrot (*Daucus carota*). Green Indian corn (*Zea mays*). Roasting eddoes (*Arum macrorrhizum*). Cucumber (*Cucumis sativus*). Green egg plant (*Solanum melongena*). Lima bean (*Phaseolus perennis*). Turnip (*Brassica rapa*). Beet-root (*Beta vulgaris*). Pumpkin (*Cucurbita pepo*). White yam (*Dioscorea sativa*). Red potato (*Batatas edulis*). Scratching eddoes (*Caladium esculentum*). Cabbage (*Brassica oleracea*). Cassava (*Manihot utilissima*). Yellow potato (*Batata*). Bread-fruit (*Artocarpus incisa*). Red yam (*Dioscorea alata*). White potato (*Batata alba*). Madeira eddoe (*Caladium sagittifolium*). Squashes (*Cucurbita melopepo*). Bonna pepper (*Capsicum angulosum*). Carib pepper (*Capsicum*). Bell pepper (*Capsicum annuum*).

#### 2 ELWELL, HENRY, Birmingham and Barbadoes.

Vase of flowers and basket of fruit; manufactured for and imported by the exhibitor. Moulded in wax by Mr. and Mrs. Henry Braithwaite, of Barbadoes.

##### Flowers.

Flower fence, or Barbadoes pride (*Cesalpinia pulcherrima*). Yellow flower fence (*Cesalpinia floridus luteis*). Yellow jasmine (*Jasminum fruticosans*). Tous les mois (*Canna achirras*). St. Vincent lilac (*Solanum Seaforthianum*). Murraya (*Murraya exotica*). Asclepias (*Asclepias*). Croton (*Caperonia palashia*). Citron blossom (*Citrus medica*). Plumbago, stone cold (*Plumbago*). Variegated hibiscus (*Hibiscus variegatus*). Yellow rose (*Rosa lutea*). Flesh-coloured oleander (*Nerium carneum*). Orange cordia (*Cordia fulvo aurea*). Sea Island cotton (*Gossypium hirsutum*). Crimson rose (*Rosa cruenta*). Musk ochre (*Hibiscus abelmoschus*). Blue convolvulus (*Convolvulus major*). Water lemon blossom (*Passiflora laurifolia*). Pomegranate blossom (*Punica flore-pleno*). African lily (*Amaryllis Africanus*). Hoya, or wax flower (*Hoya carnosia*). Austrian rose (*Rosa bracteata*). Common oleander (*Nerium oleander*). Wild French guava (*Cassia occidentalis*). Scarlet cordia (*Cordia sebastianiana*). Poplar (*Thespesia populnea*). White rose (*Rosa alba*). Queen of flowers (*Lagerstromia regina*). Gardinia (*Gardinia flore-pleno*). Orange jasmine (*Plumieria lutea*). Painted justicia (*Graptophyllum hortense*). Lignum vite (*Guaiacum officinale*). Variegated jasmine (*Plumieria bicolor*). Sweet pea (*Lathyrus odoratus*). Trumpet flower (*Bignonia unguis*). Double red lily (*Amaryllis flore-pleno*). Purple bignonia (*Bignonia purpurea*). Shell plant (*Alphina nutans*). White jasmine (*Plumieria*

*alba*). Blue vine (*Clitoria ternatea*). Barbadoes cotton (*Gossypium Barbadosense*). Madeira heath (*Russelia juncea*). Changeable rose (*Hibiscus mutabilis*). Rose of Sharon (*Hibiscus flore-pleno*). Orange rose of Sharon (*Hibiscus flore-pleno luteus*). Petrea (*Petrea volubilis*). Allamanda (*Allamanda cathartica*). Verbenum (*Verbenum*). Scarlet Brownia (*Brownia coccinea*). Red jasmine (*Plumieria rubra*).

##### Fruits.

Sugar-loaf pine-apple (*Ananassa sativa*). Variegated grape (*Vitis vinifera variegata*). Barbadoes cherry (*Malpighia glabra*). Barbadoes gooseberry (*Pefreshia aculeata*). Common vine grape (*Vitis vinifera*). Barbadoes sea-side grape (*Cocoloba Barbadosensis*). Dunk (*Zizyphus jujuba*). Water lemon (*Passiflora laurifolia*). Lemon (*Citrus*). Common guava (*Psidium poniferum*). Green star apple (*Chrysophyllum Jamacense*). Gully, or hog plum (*Spondias lutea*). Tamarind (*Tamarindus Indica*). Bell pepper (*Capsicum annuum*). Rose apple (*Jambossa Malaccensis*). Jamaica plum (*Spondias mombin*). Cocoa-pod (*Theobroma cacao*). Bourbon sugar-cane (*Saccharum Otaheiteense*). Cactus pear (*Cereus trigonus*). Purple avocado pear (*Persea gratissima*). Red cashew (*Anacardium occidentale*). Ribbon sugar-cane (*Saccharum rubane*). China orange (*Citrus aurantium*). Purple star plum (*Chrysophyllum monophyrenum*). Golden apple (*Joba dulcis*). Bonnet pepper (*Capsicum tetragonum*). Limes (*Citrus lima*). Green avocado pear (*Persea gratissima*). Papaw (*Carica papaya*). Pomegranate (*Punica granatum*). Green sugar apple (*Anona squamosa*). Peach mango (*Mangifera*). Plantain (*Musa paradisiaca*). Yellow banana (*Musa sapientum*). Purple star apple (*Chrysophyllum carulum*). Custard apple (*Anona reticulata*). Almona (*Terminatia calophya*). Citron (*Citrus medica*). Purple sugar apple (*Anona squamosa rubra*). East India mango (*Mangifera indica*). French guava (*Psidium pyriferum*). Yellow cashew (*Anacardium occidentale*). Red banana (*Musa rosacea*). Carib pepper (*Capsicum*). Mamee apple (*Mammea Americana*). Granadilla (*Passiflora quadrangularis*). Pumplouse shaddock (*Pomplouse decumana*). Green cocoa-nut (*Cocos nucifera*). Turkey fig (*Ficus pertusa*). Otaheite gooseberry (*Cicca disticha*). Bread-fruit (*Artocarpus incisa*). Water melon (*Cucumis citrullus*). Purple pepper (*Capsicum nigrum*). Grape-fruit (*Pompepos racemosus*). Sapadilla (*Achras lapiilla*). Sour-sop (*Anona muricata*). Cherry pepper (*Capsicum cerasiforme*). Chili pepper (*Capsicum consideum*). Finger pepper (*Capsicum longum*). Yellow pepper (*Capsicum luteum*).

## TRINIDAD.

SOUTH AREA, R. 31.

HARRIS, Lord, Governor; Agents, LIGHTLY & SIMON, 123 Fenchurch Street; and Messrs. DANIELL, 18 Wigmore Street, London.

THE Trinidad collection is one of much value and interest. It consists, however, almost exclusively of a series of natural specimens and productions. The few manufactures exhibited are of native workmanship; they comprise sieves, baskets, ferns, and such-like articles. Attention will, however, be drawn to a model of an Indian hut, with its simple and primitive furniture: the remarkable phenomenon, the pitch lake, is represented by a variety of specimens of pitch; some taken from its centre, some from the shores, and some from the earth in its vicinity. An economical application of this substance in the manufacture of charcoal for sugar has recently been made, and may prove of value. Minerals, metalliferous ores, clays, &c., are also sent for exhibition. Tortoise-shell and whale-oil represent the animal kingdom products. Those of the vegetable kingdom are much more numerous. Among

these are spices, oils, textile materials, agricultural products, gums and resins, drugs, and lastly, woods fitted for useful and for ornamental purposes. To many of these the attention of the naturalist, nor less that of the merchant, must be directed, and the ultimate result may prove of great benefit to the island.—R. E.

#### MINERAL KINGDOM.

1. Pitch, from the springs in the centre of the pitch lake.

[The pitch lake of Trinidad is the most remarkable natural phenomenon of that island. It is about a mile and a half in circumference, and in the vicinity of volcanoes emitting mud. On the shores of the lake the pitch is perfectly hard and cold, but towards the middle it becomes softer and more fluid. The pitch has not been much used except for pavement, as it requires the admixture of a large quantity of oil.—D. T. A.]

2. Petroleum, from springs in the Guapo Hills, near the pitch lake.

3. Cellular pitch, of which the surface of the lake principally consists.

4. Compact pitch, which crops out through other strata in the lands around the pitch lake.

5. Glance pitch, found in small detached masses, in the same.

6. Pitch turf, from a pitch bog, in the same.

7 and 8. Pitch, mixed with organic matter.

9. Mineral charcoal, prepared by Mr. H. Warner, from Trinidad pitch; and used as a substitute for animal charcoal in the manufacture of sugar; it can be produced at about one-fifth of the price of the latter.

10 to 14. Petroleum, mineral oil, naphtha, ammoniacal water and coke,—prepared from Trinidad pitch, and illustrating the process of making naphtha from pitch.

Trinidad pitch has been used extensively, and with success, as a flooring for warehouses, &c., and it is likely to be exported in large quantities for the manufacture of gas.

15. Pitch seam, found between strata of sandstone.

16. Sandstone, impregnated with mineral oils and naphtha.

17 to 20. Ochres, from the Guapo Hills.

21 and 22. Sandstone, with specular iron, from the Guapo Hills.

23. Black sand, from the sea-shore at Guapo.

24. Hematite, from Gaspari island.

25. Magnetic iron ore, from Maracass valley.

26. Iron pyrites, from the mud volcanoes.

27. Lignite, from Irois. It occurs in immense quantity, near the surface.

28. Coal, supposed to be anthracitic, from Manzanilla.

29. Slate, from St. Ann's hills; taken from the surface.

30. Honestone, from near Tamana.

31. Ochre, from Arima.

32. Clay, from Arima, used for making water jugs.

33. Earth (white), from Arima, used for white-washing houses, &c.

34. Earth (yellow), from St. Ann's river.

35. Earth (sulphureous), from near the pitch lake.

[The island of Trinidad, one of the Columbian archipelago, is about 50 miles in length from north to south and 30 miles across. A range of high ground, whose breadth is about 10 miles, runs along the northern side of the island, near the sea, and rises to the height of 1,800 to 2,400 feet, while on the south are extensive plains, also terminated by a range of hills, and at the south-west extremity are mud volcanoes. A submarine volcano exists a little south of Cape de la Brea. The pitch lake (described in another note) occupies the highest land in the island, and emits a strong smell, sensible at a distance of 10 miles. The whole island abounds with mineral oils of various kinds.

The lignite appears to be chiefly the accumulation of palm-wood. The coal is referred to, but no details of it have been forwarded.—D. T. A.]

#### ANIMAL KINGDOM.

Tortoiseshell: the hawk's-bill turtle is caught on all the coasts of Trinidad and the Gulf of Paria; the shell forms an article of export.

[This species of turtle, *Chelonia imbricata*, is readily distinguished from all others by the circumstance of the plates covering the back, overlapping each other like the tiles of a roof. These plates are much thicker, also, than those of any other species, and are more beautifully clouded. They are separated from the bone by heat, and are afterwards flattened, smoothed, and even united by their edges, by pressure at various degrees of temperature. Even the fragments and filings are capable of being rendered useful by being subject to heavy pressure in moulds, when heated to the temperature of boiling water.—T. B.]

Specimens of whale oil.

[The whale is caught in the Gulf of Paria. It usually makes its appearance about January, when the fishing season begins, and lasts till June; from 12 to 18 fish are caught annually, each giving from 60 to 80 barrels of oil.]

#### VEGETABLE KINGDOM.—(Oils and Fatty Substances.)

Cocoa-nut oil.

[A large quantity of this oil is made in the island, chiefly on the east coast, where, in one locality, there is an uninterrupted belt of cocoa-nut trees, 14 miles in extent; they usually bear nuts when five years old.]

Carap oil.

[This oil is made from the seeds of a common indigeneous tree, called *Carapa guianensis*, and is highly esteemed as an unguent for the hair, for applying to the wounds of animals, for destroying ticks and other insects which infest cattle, and for the cure of rheumatism.]

Cocoa fat: this butter-like substance is obtained from the seeds of *Theobroma cacao*, and is esteemed as an emollient.

#### Spices.

Specimens of nutmegs.

[The nutmegs grown in Trinidad are considered to be equal to any from the East, as the tree thrives well in this climate. The annual produce per tree varies from 10 to 15 lbs.]

Cloves: this tree bears an abundant crop twice in the year; the produce is of good quality.

Black pepper: the plant thrives well, and is very prolific.

Cayenne pepper: the smaller kinds of capsicum (bird pepper) are very abundant, and when dried and ground, make good cayenne pepper.

Vanilla: there are three different species of vanilla, all producing this highly-aromatic pod, and all indigenous to the colony.

#### Fibres.

Specimens of cotton.

[This, although not cultivated for many years, readily suits itself to the soil and climate; the specimen sent is grown from that variety called Sea Island cotton, a few seeds of which were imported into Trinidad, in January last year, from Jamaica. The quality or staple is better than that of many other kinds. Several persons are cultivating cotton at present as a trial crop.]

Bromelia (*Karata*): this plant is indigenous to the island, and, like all the pine-apple tribe, furnishes a strong and soft fibre.



*Sterculia* (*Caribæa* or *Majaqua*): the bark of this tree furnishes the country people with cordage, and is strong.

*Agave* (*Vivipara* or *Langue banf*): all the species of agave furnish a white, but somewhat harsh or brittle fibre.

#### AGRICULTURAL PRODUCTS.

Specimens of sugar (*Muscovado*).

[This is the staple product of the colony, and great exertions are being made to improve its quality. Mr. H. Warner, of this island, has succeeded in making a white muscovado sugar (by a peculiar process with mineral charcoal, made from the pitch of Trinidad), boiled in open pan; the specimen sent is a sample by this process.]

Specimen of rice.

[This article is productive in any part of the island, whether the land be high or low; its cultivation is not unhealthy in Trinidad, as in drier climates, where the land must be rendered swampy, for its successful cultivation.]

Specimens of cassava starch.

[These are the produce of *Jatropha manihot* (or bitter cassava). This plant is extensively cultivated. Few plants give so great return for the amount of labour bestowed on it; it forms the chief bread-stuff of the lower classes. Cassava cakes are made from its grated roots; the pulp is placed in a strainer (culebra), and after the poisonous juice is expressed, it is baked on a hot pan; they resemble oatmeal cakes in appearance. The starch is obtained from the smaller particles which pass through the strainer in a state of solution: it is then allowed to subside, and the water is separated from the starch, which is dried in the sun. This water is boiled down to a thick syrup: in the course of this operation its poisonous properties disappear, and it then forms the well-known West Indian sauce—Casaripe.]

Arrow-root: the produce of *Maranta arundinacea*, and other species. This plant produces abundantly.

Tous les mois, or tulema: the produce of *Canna coccinea*.

[This, as well as the former, gives a large return of starch. It is said that the produce per acre, in good soil, is equal to that of sugar from the sugar-cane, viz., from one to two tons per acre. The starches from both plants are manufactured in a similar manner: the thick fleshy corms are washed and passed through a series of rollers, then stirred rapidly in large vats, in order to precipitate the starch, which is afterwards washed several times, and dried in the sun.]

Brazil nuts: the produce of *Bertholettia excelsa*. The tree has been introduced from South America, and is ornamental and useful.

Tonquin bean: the tree, *Dipterix odorata*, was introduced from British Guiana.

Indian corn, or maize.

Coffee (Mocha): this variety of coffee has been introduced some years, and preserves, in cultivation, its peculiarly small round grain.

Theobroma, cacao, or cocoa: this tree is extensively cultivated; its produce forms a large article of export. The soil and climate of Trinidad combine to make it very productive. The annual export of late years has been above 4,000,000 of pounds.

Cocoa, or chocolate, manufactured.

Tobacco, in the leaf, from Siparia.

Tobacco, manufactured, from the same place.

#### Gums and Resins.

Gun anime: from Arima, the produce of *Hymenæa courbaril*.

Incense: the produce of *Trichilia trinitensis*.

#### Medicinal Products.

Sarsaparilla: the produce of *Smilax*, and abundant.  
Ginger.

#### Tanning and Dyeing Materials.

Turmeric, logwood, and fustic.

#### Woods for Ornamental and other Purposes.

*Hymenæa courbaril*, or locust: a valuable timber, and abundant, which grows from two to six feet in diameter.

Yoke: a handsome wood, analogous to mahogany, usually from two to three feet diameter.

*Cedrela odorata*: West Indian cedar; a useful and ornamental timber, from three to twelve feet in diameter.

*Rhopala montana* (*Aquatapana*): a wood very durable, and taking a fine polish; growing from 18 inches to 3 feet in diameter.

*Tapana*: used for felloes of wheels, and where strength and toughness are required.

*Cordia* (or *Sepe*): a useful light wood, analogous to English elm in texture, and possessing a bitter principle obnoxious to insects; from one to two feet in diameter.

*Acaras* (*Balata*): a timber much used; from two to six feet in diameter.

*Achras* (*Acoma* or *Mastic*): like the timber of the whole family of *Sapotacæ* much valued; from two to four feet in diameter.

*Achras* (*Zapotilla* or *Zapodilla*).

*Astrocaryum aculeatum* (*Gri gri*): this, like most of the palm tribe, furnishes good material for veneering.

*Acrocomia sclerocarpa* (*Gru gru*): a wood similar to the last.

*Carapa guianensis* (or *Carapa*): a useful timber, analogous to cedar; from two to three feet in diameter.

*Bucida buceras* (or *Olivia*): a strong useful wood, commonly used for making shingles; from two to four feet in diameter.

Purple heart: an abundant and useful timber, from two to four feet in diameter.

Fustic: used for all purposes where strength is required, and as a dyewood; from one to three feet in diameter.

*Lecythis* (*Idatamon* or *Aguatacero*): commonly used as shafts for carts, &c.; a tough wood of large size, and very common.

*Tecoma serratifolia* (*grey poui*); *Tecoma* (*black poui*); *Tecoma* (*green poui*).

[These bignoniaceous trees furnish hard and durable woods; their timber takes a fine polish, and has a peculiar colour; they furnish the most useful timbers of the colony; they are very abundant, and of large size, from three to four feet in diameter.]

*Brosimum guianens* (*Letter-wood*): the heart wood is the only part used, and is never of any great size.

*Crescentia cujete* (or *calabash*): furnishes a timber applicable to the same purposes, as that of the ash in England; it is used for boat-building; is very tough; and a common tree in the woods; about two feet in diameter.

*Geoffroya inermis* (or *l'Angeline*); a timber much employed as naves for wheels and other purposes.

*Paltivia*. Bois gri (or *iron-wood*).

*Mimosa juliflora* (*Yoke savan*); a hard and useful wood.

Roble: a common and excellent wood, from two to three feet in diameter.

*Copaifera officinalis* (*Copai*): is an ornamental and lasting wood.

*Vitex capitata*: this tree is reckoned durable timber, and is very common.

Bois lizard—*Guaiacum officinale* (*Lignum vita*): very hard wood, about one foot in diameter.

#### MANUFACTURES, ORNAMENTAL SEEDS, &c.

Sieve, made of a species of *Maranta*, for sifting cassava meal.

Culebra, for expressing the cassava pulp, and extricating the cassava starch.

Calabashes (carved).

Fans, for ladies.

Fish-basket, as used by the Indians.

Seeds (ornamental): seeds used for beads of different kinds, viz., *Adenanthera pavonina*, *Coix lachryma*, *Erythrina corallodendron*, *Ormosia dasycarpa*.

[Of the plants which furnish seeds adapted for beads, the *Coix lachryma* is a tropical grass, indigenous in the East Indies—introduced into the West Indies. Its seeds, or, more properly, fruits, are hard and stony, and have a beautiful pearly lustre; they are popularly known as Job's Tears. The others are leguminous plants, whose seeds, properly so called, are remarkable for hardness and beauty. *Erythrina corallodendron* is a member of the kidney-bean group; *Adenanthera pavonina*, a tree of the mimosa tribe, is often called "red sandal-wood;" *Ormosia dasycarpa* is the necklace-tree; its seeds are of a most brilliant red hue, with a black eye.—E. F.]

Model of an Indian hut, in the village of Arima, 16 miles from the town of Port of Spain, made by Manuel Sorzano.

Its contents are as follow:—

- |                                                                                                                                                                                                                          |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 Arco—Bow.                                                                                                                                                                                                              | 39 El trago—The frog.                                                                 |
| 2 Flechas—Arrows.                                                                                                                                                                                                        | 40 Gato—Cat.                                                                          |
| 3 Fonda—Fishing Net.                                                                                                                                                                                                     | 41 Perro—Dog.                                                                         |
| 4 Taparos—Long calabashes used for keeping honey, &c.                                                                                                                                                                    | 42 Anoto—Anoto used for cooking.                                                      |
| 5 Cambes—Casada made of manioc.                                                                                                                                                                                          | 43 Abispero—Jack Spaniard's nest.                                                     |
| 6 Taralla—Cast net.                                                                                                                                                                                                      | 44 Comejen—Wood lice.                                                                 |
| 7 Trapiche—Used for pressing sugar-canes to extract the juice.                                                                                                                                                           | 45 Escova—Broom.                                                                      |
| 8 Anseledor—Fishing-rod.                                                                                                                                                                                                 | 46 Garabato—Hook.                                                                     |
| 9 Escua—Kept over fire-place to preserve provisions by smoke.                                                                                                                                                            | 47 Cuero de gato tigre—Tiger-cat's skin.                                              |
| 10 Hoya—Cooking-pot.                                                                                                                                                                                                     | 48 Cama—bed.                                                                          |
| 11 Casuela—Dish.                                                                                                                                                                                                         | 49 Troja del viego—Old man's bed.                                                     |
| 12 Topias—Stones on fire-place.                                                                                                                                                                                          | 50 Estera—Mat.                                                                        |
| 13 Hacha—Axe.                                                                                                                                                                                                            | 51 Chinchorro—Hammock.                                                                |
| 14 Guayare—Basket carried on the back.                                                                                                                                                                                   | 52 Old Indian pascual.                                                                |
| 15 Pionilla—Indian bead.                                                                                                                                                                                                 | 53 Ynes—Indian woman.                                                                 |
| 16 Chosa—Bird-trap.                                                                                                                                                                                                      | 54 Canuto—Indian child.                                                               |
| 17 Banco—Bench.                                                                                                                                                                                                          | 55 Tiramba—Used as a Jew's harp.                                                      |
| 18 Machete—Cutlass.                                                                                                                                                                                                      | 56 Butaque—Easy chair.                                                                |
| 19 Placanos—Plantains.                                                                                                                                                                                                   | 57 Arepas—Corn bread.                                                                 |
| 20 Piedra de Moler—Grinding-stone for making arepas (Indian corn-cake).                                                                                                                                                  | 58 Totumas—Calabashes.                                                                |
| 21 Totuma de Moler—Calabash receiving the corn.                                                                                                                                                                          | 59 Cuero de Benao—Deer-skin.                                                          |
| 22 Cuchillo—Knife.                                                                                                                                                                                                       | 60 Pecho de Piapoco—Tocan's skin.                                                     |
| 23 Paleta—Washerwoman's beetle.                                                                                                                                                                                          | 61 Guareguare—Fan.                                                                    |
| 24 Canasto—Basket.                                                                                                                                                                                                       | 62 Pala—Shovel.                                                                       |
| 25 Lena—Wood for fuel.                                                                                                                                                                                                   | 63 Chicora—Used for digging holes.                                                    |
| 26 Trojita—Used as a table.                                                                                                                                                                                              | 64 Piedra de Movejon—Stone for grinding cutlasses, &c.                                |
| 27 Naza de Poso—Fish-pot for deep water.                                                                                                                                                                                 | 65 Cucharas—Spoons.                                                                   |
| 28 Naza de Corriente—Fish-pot for strong streams.                                                                                                                                                                        | 66 Azadon—Hoe.                                                                        |
| 29 Sebocan—Used for extracting the poisonous juice of the manioc for the purpose of making casadas, a juice which is called catara (castiripe), and when boiled loses its poisonous effect, and makes a very good sauce. | 67 Rayo—Grater.                                                                       |
| 30 Molenillo—Swizzle-stick.                                                                                                                                                                                              | 68 Tirtite, Maranta (species of)—(outside of the stem of).                            |
| 31 Yesquero—Tinder-box.                                                                                                                                                                                                  | 69 Mamure, <i>Carludovica scandens</i> (aerial roots of).                             |
| 32 Pilon—Mortar.                                                                                                                                                                                                         | 70 Camuare, <i>Desmonchus Orycanthus</i> (scandent stem of).                          |
| 33 Bandola—A sort of guitar.                                                                                                                                                                                             | 71 Cerima—Pothos (species of).                                                        |
| 34 Batea—Tub.                                                                                                                                                                                                            | 72 Maraca—Bangle or Clac-chac used for dancing, accompanied by the bandola or guitar. |
| 35 Chirguas—Water-jars.                                                                                                                                                                                                  | 73 Chaguarama—Used as a mat ( <i>Azeca oleracea</i> ).                                |
| 36 Mapire—Basket.                                                                                                                                                                                                        | 74 Cortadera—(Scleria, species of).                                                   |
| 37 Manare—Sieve.                                                                                                                                                                                                         | 75 Timite— <i>Manicaria sciccifera</i> (leaf of).                                     |
| 38 Gallo—Cock.                                                                                                                                                                                                           | 76 Cachipo leaves—(Maranta, species of).                                              |
|                                                                                                                                                                                                                          | 77 Pabilo—Wax-taper.                                                                  |

[The Indians of Trinidad were of the section of Caribs known as Yaoui. Like other members of the Carib race, the pure breed is scarcely, if at all, existing now. The greater number of articles enumerated in the preceding

list, as contents of an Indian hut, are of Spanish or of modern West Indian origin; so are the terms applied to them. Of the vegetable substances exhibited, several, as well as several utensils, concern the cassava, or *cassada*, a valuable article of food in the West Indies. It is prepared from the roots of the *Manihot utilisima*, or *Jatropha manihot*, a shrub of the spurge tribe. The large roots of this plant are full of poisonous juice, but when rasped, washed, and heated, the remaining substance is the nutritive cassava, and the starch is tapioca. Of other vegetables mentioned, the *Carludovica scandens* is a plant of the *Pandanus*, or screw-pine tribe; the *Desmoncus* is a spiny palm; the *Azeca oleracea* is the famous West Indian cabbage-palm, of which the terminal bud furnishes a valuable and delicious article of food; the *Manicaria* is also a palm; the *Scleria* is a kind of sedge; the *Pothos* a plant of the *Arum* tribe; and the various kinds of *Maranta* are arrow-root plants. The "Jack Spaniard" is a kind of wasp.—E. F.]

## ANTIGUA.

SOUTH AREA, Q. 30.

GREY, The Countess.

Fossil wood from Antigua, sent home by Governor Higginson.

## ST. VINCENT.

SOUTH AREA, Q. 30.

ONE exhibitor from St. Vincent has sent contributions to the Exhibition. The articles forwarded consist of vegetable materials employed in basket-making, and for coarse textile purposes.—R. E.

BULLOCK, G., *St. Vincent*.

A selection of supple-jacks.

Arooma, as it grows. Arooma prepared by the Caribs for making baskets.

Mahant as it grows; the bark being the part used.

Mahant bark unprepared.

Mahant bark prepared for twisting into fishing-lines.

Lapeto in the raw state.

Lapeto prepared to be worked.

Lapeto in fine and coarse lines, for fishing, being very strong for the purpose.

## BAHAMAS.

SOUTH AREA, R. 31.

SIX exhibitors only appear to represent these islands at the Exhibition. Their contributions relate exclusively to the products of the vegetable and animal kingdoms, and of those only a very small number are exhibited. The models of fruit in wax form an interesting series, and represent with fidelity some of the most highly-esteemed vegetable delicacies of western produce. *Yucca* hemp and palmetto stuff are likewise exhibited. The beautiful white and coloured vases of shells, gathered from the shores of the Bahamas, are very attractive objects. Specimens of West India sponge and timber are also found among other articles.—R. E.

BARNETT, Mrs. EDWARD, of *Nassau*, and 14 *Woburn Square, London*—Producer.

Specimens of Fruits in Wax:—

- 1 Bread-fruit (*Artocarpus incisa*).
- 2 Plantain (*Musa sapientium*).
- 3 Coco plum (*Chrysobalanus icaco*).
- 4 Prickly pears (*Cactus opuntia*).
- 5 Banana (*Musa paradisiaca*).

- 6 Cashew (*Anacardium occidentale*).
- 7 Spanish pepper (*Capsicum annum*).
- 8 Star-apple—showing the interior (*Chrysophyllum cainito*).
- 9 Papaw (*Carica papaya*).
- 10 Spanish plum (*Spondias chrysothalamus*).
- 11 Gooseberry (*Cicca disticha*).
- 12 Water-lemon (*Passiflora laurifolia*).
- 13 Aqni.
- 14 Sugar-apple (*Anona squamosa*).
- 15 Balsam (*Impatiens noli me tangere*).
- 16 Star-apple (*Chrysophyllum cainito*).
- 17 Fig (*Ficus carica*).
- 18 Sugar-cane (*Saccharum officinarum*).
- 19 Banana—showing the interior (*Musa paradisiaca*).
- 20 Sour sop (*Anona muricata*).
- 21 Guava (*Psidium pyrififerum*).
- 22 Custard-apple (*Anona reticulata*).
- 23 Cherry (*Cordia alliodora*).
- 24 Guava—showing the interior (*Psidium pyrififerum*).
- 25 Sapodilla—showing the interior (*Achras sapodilla*).
- 26 Hog-plum (*Spondias myrobalans*).
- 27 Bread-fruit—showing the interior (*Artocarpus incisa*).
- 28 Mango (*Mangifera indica*).
- 29 Avocado pear—cut to show the interior (*Persea gratissima*).
- 30 Banana—red (*Musa paradisiaca*).
- 31 Fig banana (*Musa coccinea*).
- 32 Sapodilla (*Achras sapodilla*).

THOMPSON, JOHN THOMAS, *Nassau*—Producer.

Specimens of Yucca hemp prepared by the exhibitor:—  
 A One leaf of the Yucca (*Serrulata*).  
 B The billets between which they are packed cut from the flower-shaft.

[This cork-like material is of use where softness and elasticity are required in bedding, or stuffing, or packing different sorts of work; in bodies of razor-strops. In thick or thin sheets, it is very convenient for purposes where points have to be fixed and withdrawn easily, such as cases for entomological purposes.]

- C Hemp prepared from the Yucca leaf.  
 D Rope prepared from the hemp, but stained in soaking.  
 E The same of the natural colour.

Specimens of palmetto stuff:—

- 1 Leaves of the palmetto.
- 2 Fibre prepared from the leaves.
- 3 Rope completed.

NICOLLS, Miss CAROLINE, *Nassau*—Producer.

Crown and pedestal of shell work.

GRANT, Miss, *Nassau*—Producer.

Vase manufactured of the mimosa bean.

BARNES & Co., *Nassau*—Producers.

Case of specimens of different varieties of West Indian sponge.

Specimens of woods, including satin-wood, horseflesh, mahogany, commonly called Madeira, horseflesh mahogany, cedar, crab-wood, log-wood, stopper-wood, and lignum vitæ.

GREIG, The Misses, *Nassau*—Manufacturers.

An epergne composed entirely of shells, forming cornucopias filled with flowers, in great variety of colour and beauty: the whole of the shells were gathered from the shores of the Bahamas. (*Consignees*, Messrs. DANIELL, 18 Wigmores Street, London.)

A large vase, with group of flowers, composed entirely of pure white shells.

A figure in a fancy costume, of shell-work.

(Forwarded by Governor Gregory to J. B. Cameron, Esq.)

## GRENADA.

SOUTH AREA, R. 30.

TAPIOCA and nutmegs form the only articles representing Grenada at the Exhibition. These prove by no means the most important articles of export from this island; but one of them, nutmegs, is interesting as being of recent introduction into cultivation.—R. E.

GROSE, HENRY, 12 Coleman Street, London—  
 Importer.

Tapioca: prepared from the roots of the cassava plant, and forming a highly-nutritious article of food. The plant is extremely prolific and easy of cultivation.

Nutmegs: introduced into the island by Mr. Kennedy, in 1827. The export to the United Kingdom amounted in 1850 to 1,400 lbs.

## MONTSEERRAT.

SOUTH AREA, Q. 10.

Two articles only appear to represent Montserrat: these are both articles of food.—R. E.

- A box of maize or Indian corn.  
 A box of arrow-root.

## ST. KITT'S.

SOUTH AREA, R. 30.

THIS island is represented by one exhibitor, a native black labourer. The contribution furnished is a fishing-utensil, made out of the inner bark of a tree.—R. E.

A West Indian fish-pot, made by John Morris, a black labourer, in the Island of St. Christopher, from the inner bark of a tree.

It is usually baited and weighted, and then sunk to the depth of eight or ten fathoms. A buoy marks the spot, and it remains about twelve hours in the water.

## BRITISH GUIANA.

SOUTH AREA, R. 32.

ABOUT one hundred and sixty exhibitors appear to represent this most interesting colony. The contributions forwarded belong almost exclusively to the first section of the classification of the Exhibition. There are a few specimens of native manufactures in wood and woven work, as the shaak-shaak, used to make a noise in the dances; the singular baskets used by Indian women to carry their children in, fly-brushes, baskets made of the cabbage-palm, fans of the eta palm, &c. But these exhibit simply that neat but rude and simple industry which, with little or no elaboration of the raw material, produces implements and ornaments from the most convenient substances yielded by nature. The articles in the first four Classes are extremely valuable and interesting, not only to the naturalist, but also in a commercial point of view. The arrow-root, starches, tapioca, coffee, cotton, sugar, and timber, abundantly yielded by plants in this prolific colony, are well represented. Several of the contributions are experimental in their tendency, and have been made with a view to learn the probability of the development of a commercial demand for these articles. The timber of this colony will probably ultimately become valuable in commerce. Several medicinal products are likewise exhibited.—R. E.

CATALOGUE of ARTICLES, the Produce of BRITISH GUIANA, a colony on the coast of SOUTH AMERICA, comprising the counties of DEMERARA, BERBICE, and ESSEQUEBO, exhibited by ALEXANDER F. RIDGWAY, 42 Leicester Square, London, Agent to the Royal Agricultural and Commercial Society of the Colony.

POLLARD, T. M.

1 White sand, from Mount Pleasant, Warratilla Creek, River Demerara.

[This sand has been exported to the United States of America for the purpose of glass-making.]

2 Red sand, from Warratilla Creek, River Demerara.

DUGGIN, T. B.

3 White sand, from Monte Video, River Berbice, about 200 miles above its estuary.

4 Oreala, a decomposed rock, from River Berbice, supposed to be valuable in the manufacture of pottery.

[The rocks yielding the materials of ordinary pottery are of the granitic and porphyritic series. The agency of slow but continued decomposition, by atmospheric gases and water, causes the separation of their hard materials, and their resolution into a soft friable mass, now often called porcelain clay. This decomposition affects the felspar composing these rocks. The rock in question is in all probability a felspathic rock.—R. E.]

BEE, J. F.

5 Clays and sands, from an Artesian boring, and obtained at various depths.

[These clays and sands were obtained at various depths from an Artesian boring. This boring, 4 inches in diameter and 118 feet in depth, on Plantation Woodlands, one mile from the mouth of the Mahaica River, was executed between 6th and 22nd October, 1849, by Mr. John Allt. The water is delivered 18 inches above the surface of the soil, and is greatly increased in quantity by the flood of spring tides, like all other Artesian borings of the colony. The following memorandum was taken during the process of boring:—1 to 5 feet, surface soil; 6 feet, layer of caddy; 7 to 9 feet, blue clay; 9 to 39 feet, soft mud mixed with caddy, in which the auger went down by its own weight; 39 to 53 feet, rotten wood and pegass, or decayed vegetable matter; 53 to 55 feet, bluish-grey clay, stiff; 55 to 57 feet, clay, a little red and grey; 57 to 70 feet, reddish clay; 70 to 82 feet 10 inches, yellowish-grey clay, with a little sand and ochre, very stiff; 82 feet 10 inches to 86 feet 8 inches, bluish-grey clay, streaked; 86 feet 8 inches to 92 feet, bluish-grey clay, streaked, more yellow. The bed of sand from which the water is obtained was reached at a depth of 118 feet, and the same stratum was found at a depth of 125 feet. The numbers on the 31 specimens sent indicate the depth in feet at which they were obtained.

There are a considerable number of Artesian wells in this colony: the water is not, however, pure. It contains a large quantity of oxide of iron, held in solution by carbonic acid. This separates as a yellow deposit on exposure of the water to the air.—R. E.]

NETSCHER, A. D. VAN DER GON.

6 Rice, from Plantation Klein Pouderoeyen, River Demerara.

DUGGIN, T. B.

7 Rice, from Monte Video, River Berbice.

[The colony of British Guiana is eminently favourable for the cultivation of rice. It is worthy of remark, that three crops can be obtained annually in this colony from

one sowing, the new crop ratooning or springing up from the old roots after each reaping.]

NETSCHER, A. D. VAN DER GON.

8 Maize, or Indian corn, from Plantation Klein Pouderoeyen, River Demerara.

[The maize (*Zea mays*, Lin.) grown in British Guiana, commands a higher price in the market than that imported from the United States of America, from which the chief supply is derived.]

9 Meal from maize, or Indian corn, from Plantation Klein Pouderoeyen, River Demerara.

10 Plantains, unripe, sliced and dried without the aid of fire, from Plantation Klein Pouderoeyen, River Demerara.

[The plantain (*Musa paradisiaca*) has frequently been suggested as an article of export. In its ripe state, no unexceptionable and sufficiently cheap method of preserving it has yet been suggested. It is sometimes so abundant and cheap that it might, if cut and dried in its green state, be exported with advantage. It is in this unripe state that it is so largely used by the peasantry of this colony as an article of food. It has always been believed to be highly nutritive; but this is scarcely justified by analyses.

When dried and reduced to the state of meal, it cannot, like wheat flour, be manufactured into macaroni or vermicelli, or at least the macaroni made from it falls to powder when put into hot water. The fresh plantain, however, when boiled whole, forms a dense firm mass, of greater consistency and toughness than the potato. This mass, beaten in a mortar, constitutes the *foo-foo* of the negroes. The plantain meal cannot be got into this state unless by mixing it up with water to form a stiff dough, and then boiling it in shapes or bound in cloths.]

11 Plantain meal, or konkin tay, from Plantation Klein Pouderoeyen, River Demerara.

[Plantain meal is prepared by stripping off the husk of the plantain, slicing the core, and drying it in the sun. When thoroughly dry, it is powdered and sifted. It is known among the Creoles of the colony under the name of *Conquin-tay*. It has a fragrant odour, acquired in drying, somewhat resembling fresh hay or tea. It is largely employed as the food of infants, children, and invalids. As food for children and convalescents, it would probably be much esteemed in Europe, and it deserves a trial on account of its fragrance, and its being exceedingly easy of digestion. In respect of nutritiveness, it deserves a preference over all the pure starches on account of the proteine compounds it contains.

The flavour of the meal depends a good deal on the rapidity with which the slices are dried; hence the operation is only fitted for dry weather. Above all, the plantain must not be allowed to approach too closely to yellowness or ripeness, otherwise it becomes impossible to dry it. The colour of the meal is injured when steel knives are used in husking or slicing, but silver or nickel blades do not injure the colour. Were the plantain meal to come into use in England, and bear a price in any way approaching to that of Bermuda arrow-root, it would become an extensive and very profitable export. Full-sized and well-filled bunches give 60 per cent. of core to 40 of husk and top-stem, but in general the core does not much exceed 50 per cent., and the fresh core will yield 40 per cent. of dry meal, so that from 20 to 25 per cent. of meal is obtained from the plantain, or 5 lbs. from an average bunch of 25 lbs.; and an acre of plantain walk of average

near 450 such bunches,  
[on and 10 lbs. of meal.]

DAVISON, WILLIAM.

Main meal, from Plantation Vigilance, East  
Demerara.

GARLAND, T.

Main meal, from Plantation Herstelling, River

Main meal, from the same planta-

tion Herstelling, River

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versal experience

here it is found. The pr

has been thus described:—

usually conducted as follows:—T

men up, sifted, and exposed to the

it is fully more than half dry.

and thickness of the cake to be made is

on a griddle or hot plate, and the space within

is filled evenly with the somewhat moist meal, no previous

ading or rolling having been employed. As soon as

coarse meal coheres, the ring is lifted and the cake is

ed and heated on the opposite side. The heat should

be sufficient to brown the cake. The cakes are finally

and by exposure to the sun. From the dry cassava

cakes may be prepared by sprinkling it with as much

water as to moisten it to the proper point, and then

proceeding as above. Hot water cannot be employed,

neither can kneading, or any considerable degree of com-

pression be used, otherwise the water does not evaporate

readily enough, the starch gets too much altered by the

heat, and the cake becomes tough."—*Dr. Shier's Report*

*on the Starch-producing Plants of British Guiana.*

—R. E.]

DE PUTRON, J.

15, 15a, 15b Bananas, dried without the aid of fire,  
from Plantation Vigilance, East Sea Coast, Demerara.

[The banana is yielded by *Musa sapientum*, Lin. These specimens are sent in order to ascertain the likelihood of their standing the voyage, and becoming an article of export. They were prepared in the month of September, 1850. The following information regarding the banana is extracted from a popular source:—"Eight or nine months after the sucker has been planted, the banana begins to form its clusters, and the fruit may be collected in the tenth or eleventh months. When the stock is cut, the fruit of which has ripened, a sprout is put forth, which again bears fruit in three months. The whole labour of cultivation which is required for a plantation of bananas, is to cut the stalks laden with the ripe fruit, and to give the plants a slight nourishment once or twice a year by digging round the roots. A spot of little more than a thousand square feet will contain from 30 to 40 banana plants. A cluster of bananas, produced on a single plant, often contains from 160 to 180 fruits, and weighs from 70 to 80 lbs. But reckoning the weight of a cluster only at 40 lbs., such a plantation would produce more than 4,000 lbs. of nutritive substance. Humboldt calculates that as 33 lbs. of wheat and 99 lbs. of potatoes require the

same space as that in which 4,000 lbs. of bananas are grown, the produce of bananas is consequently to that of wheat as 133 to 1, and that of potatoes as 44 to 1. The banana ripened in the hot-houses of Europe has an insipid taste, but yet the natives of both Indies, to many millions of whom it supplies their principal food, eat it with avidity, and are satisfied with the nourishment it affords. This fruit is a very sugary substance, and in warm countries the natives find such food not only satisfying for the moment, but permanently nutritive. Yet weight for weight, the nutritive matter cannot at all be compared with that of wheat, or even potatoes. At the same time a much greater number of individuals may be supported upon the produce of a piece of ground planted with bananas, compared with a piece of the same size in Europe growing wheat. Humboldt estimates the proportion as 25 to 1; and he illustrates the fact by remarking that a European newly arrived in the torrid zone is struck with

much as the extreme smallness of the spots  
ation round a cabin which contains a nume-  
-atu  
-of Indians." It may be proper here to notice  
the  
-nana is cultivated in this colony to a very  
-ed ex-  
-nt, and used solely as a fruit in its ripe state.  
-plant  
-s, on the other hand, is extensively cultivated,  
-in its  
-ripe state is the staple and favourite food of  
-the Creole and African population of the colony.]

NETSCHEER, A. D. VAN DER GON.

16 Coffee, from Plantation Klein Pouderoeyen, River Demerara.

KENNEDY, JOHN.

16a, 16b Pearl coffee, from Plantation Nooit Gedacht, Canal No. 1, River Demerara.

BEE, J. F.

17, 18 Coffee in the husk, and in the berry, from Georgetown, Demerara.

[The quantity of coffee, the produce of British Guiana, returned for taxation in 1842, amounted to 1,214,010 lbs. Dutch. The cultivation is now almost extinct. Nos. 16a and 16b are from one of the few estates which have been and still continue to be cultivated solely as coffee plantations.]

NETSCHEER, A. D. VAN DER GON.

19 Cocoa seeds, from Plantation Klein Pouderoeyen, River Demerara.

[Cacao, or cocoa (*Theobroma cacao*, Lin.) was never extensively cultivated in this colony, although the soil and climate are well adapted for its production.]

DUGGIN, T. B.

20 Saouari nuts, from River Berbice.

[Saouari nuts (*Pekea tuberculosa*, Aubl., or *Cayocar tomentosum*, Dec.) The kernel of this nut is one of the most delicious fruits of the nut kind known. It abounds in the forests on the banks of the rivers of the colony.]

OUTRIDGE, J. ESQ.

20a Seed-vessel of the "monkey pot," from the River Demerara.

[This seed-vessel is said to contain a large number of oleaginous kernels.]

SHIER, DAVID.

21 Capsicums, dried capsules.

22, 22a Capsicums, preserved in dilute acetic acid.

23 Capsicums, active principle extracted by olive oil.

24 Capsicums, active principle extracted by vinegar, all from Plantation Kitty, East Sea Coast, Demerara.

[These capsicums, known in the colony under the name of Buckramanni peppers, are the most pungent and aro-

matic of the whole tribe. The seeds, which are inert, have been removed, and the dried capsules are sent in the expectation of their being found to be a more piquant condiment than the article sold under the name of Cayenne pepper.]

STUTCHBURY, J. S.

25 Capsicums, preserved in dilute acetic acid, from Georgetown, Demerara.

DUGGIN, T. B.

26 Fruit of a shrub, called birambi, from River Berbice, preserved in pickle.

[This fruit makes a delicious preserve.]

NETSCHER, A. D. VAN DER GON.

27 Limes (*Citrus lima*), from Plantation Klein Poudroyen, River Demerara, preserved in pickle.

STUTCHBURY, J. S.

28 Kasareep, the inspissated juice of the bitter cassava, from Georgetown, Demerara.

[Kasareep, from the *Jatropha manihot*, is much used as the basis of sauces, and is used extensively in the colony in the preparation of pepper-pot, &c. Dr. Shier, in the Report referred to, notices it as follows:—"To those who have never visited the tropics, it may be proper to notice that *casareep* is the concentrated juice of the roots of bitter cassava, and the basis of the West Indian dish pepper-pot. One of its most remarkable properties is its high antiseptic power, preserving any meat that may be boiled in it for a much longer period than can be done by any other culinary process. *Casareep* was originally a Buck or Indian preparation, and has often been described with more or less accuracy." It is well known that some of the Dutch planters of this colony have, by means of the addition of a small quantity of *casareep*, from time to time, to varieties of animal food, been enabled to keep up, in daily use, the *same pepper-pot* for many years.]

BEE, J. F.

29 Kasareep, the inspissated juice of the bitter cassava, from Georgetown.

DE PUTRON, J.

29a Saline ash; in appearance similar to a black cinder.

[This ash is obtained by burning certain plants growing on the rocks near the Rapids, about 1,000 miles up the River Demerara. The salt is extracted when required by mixing water with the ash, and after the insoluble parts have subsided, pouring off the solution and using it as salt. A similar saline ash is also said to be obtained by burning the *Ita palm*.]

STUTCHBURY, J. S.

30 Turmeric root, from Georgetown, preserved in dilute acetic acid.

[The Turmeric (*Curcuma longa*, Lin.) grown in this colony is superior to any imported.]

GARNETT, H. T.

31 Arrow-root, from Plantation Herstelling, River Demerara.

[The produce of *Maranta arundinacea*, Lin.]

32 Starch, from the bitter cassava, from Plantation Herstelling, River Demerara.

[When the roots of the cassava plant are rasped and washed in water, a large quantity of starch granules are extracted from the vegetable tissue, and float in the water. The water charged with these granules is allowed to stand, when the granules settle down, and the superabundant fluid is poured off. The starch is then collected and dried.—R. E.]

SHIER, DAVID.

33 Starch, from the sweet cassava, from Plantation Kitty, East Sea Coast, Demerara.

[The sweet and bitter cassava merit attention as starch-producing plants. The sweet cassava yields 26.92, and the bitter 24.84 of starch per cent. They are occasionally grown for this purpose in the colony, and yield a large percentage of starch; but there exists an opinion, whether well or ill founded, that it is liable to rot linen, and the preference is given here to the starch of arrow-root. Cassava grows readily in any soil, and, with good drainage, two crops of the sweet variety are yielded per year. It grows luxuriantly in the light soils of the interior, as well as in the stiff clay soils of the coasts. It is considered an excellent preparatory crop in new and stiff land, on account of its tendency to loosen the soil.]

34 Starch, from the plantain, from Plantation Kitty, East Sea Coast, Demerara.

35 Starch, from Buckyam, from Plantation Kitty, East Sea Coast, Demerara.

ANDERSON, GEORGE, & Co.

36 Vacuum-pan sugar, from Plantation Ogle, East Sea Coast, Demerara.

[This sugar was manufactured as follows:—The cane juice was clarified by lime, and the coagulum separated by subsidence, by means of clay. The evaporation was conducted in the ordinary way, and finished in the vacuum pan. This sugar was washed by means of Innis's process.]

JONES, JOHN.

37, 38 Vacuum-pan sugar, from Plantation Hope, East Sea Coast, Demerara.

[The sugar No. 37 was washed by means of Innis's process; that of No. 38 was cleaned by means of Hardman and Finzel's patent centrifugal machine.]

STUTCHBURY, J. S.

39 Vacuum-pan sugar, from Plantation Emnore, East Sea Coast, Demerara.

[In the manufacture of this sugar, the syrup was passed through animal charcoal before being put into the vacuum pan.]

LAING, JAMES.

40 Sugar, from Plantation Friends, River Berbice, manufactured in Gadsden and Evans's pan.

[This sugar on being removed from the pan was put into cones, and, after the molasses were drained off, was syruiped.]

SHIER, DAVID.

41, 42, 43, 44 Muscovado and molasses, from the Colonial Laboratory, Georgetown, Demerara.

[This muscovado (No. 41) was made according to the plan recommended by Dr. Shier. Lime in slight excess was used in clarification. The coagulum was got rid of by subsidence. The excess of lime was neutralised, and the juice was concentrated on the open fire. No washing or syruiping had recourse to. The specimen of molasses (No. 42) is from the muscovado sugar marked No. 41. The muscovado (No. 43) was made by a modification of Melsen's process. No washing or syruiping was used. The specimen of molasses (No. 44) is from the muscovado sugar marked No. 43.]

STUTCHBURY, J. S.

45 Muscovado, from Plantation Fellowship, Mahaicong, East Sea Coast, Demerara.

[Manufactured by the ordinary process in use on estates in this colony.]

of the above-mentioned sugars are the produce of the Otaheite or Tahiti cane (*Saccharum officinarum*, Lin.), the variety universally cultivated in this colony.]

46 Copaiba, balsam of, from River Pomeroon, Essequibo. [There are several trees in this colony supposed to yield the balsam, not yet botanically determined.]

OUTRIDGE, J.

47 Caoutchouc, from River Demerara, near the Falls. [Taken from the India-rubber tree by tapping, and formed into balls by the Indians, who climb the tree, and, as the gum exudes, rub it on their bodies till it assumes a sufficient consistency to be formed into balls.]

48 Milk from the cow-tree, from River Demerara. [The cow-tree in question is the Hya-hya (*Tabernaemontana utilis*). It grows freely in the dense forests of this colony. It is related that an exploring party having felled one of these trees near a brook, the quantity of milk discharged by it was so great, as in the course of an hour to render the water quite milky.]

It is one of the interesting discoveries of botanists that several trees yield a milk-like fluid, which is in almost all respects comparable to that afforded by the cow. Humboldt describes, in striking language, his slaking his thirst by a draught of milk from the *Palo de Vaca*, a cow-tree of South America. Trees belonging to different genera have been called by this name. The cow-tree of South America is an arto-carpad; other cow-trees belong to the order of figs. The milk has been analysed, and found to yield a considerable proportion of gelatine, a principle found in the animal fluid.—R. E.]

DUGGIN, T. B.

49 Gum resin, from the simiri or locust tree, from River Berbice.

[This gum is obtained by digging in the vicinity of the roots of the tree (*Hymenaea courbaril*, Lin.), from which it exudes in a vertical direction in columns or pieces upwards of a foot in length. It may also be obtained by tapping the tree, when in the course of a few days a large solid mass is formed. It is said to be the gum anime of commerce, and is occasionally used in this colony for the same purposes as gum copal. It may be obtained in great abundance in various parts of the colony.]

BONYUN, G. R.

50 Karman, from River Essequibo.

[Used by the Indians for waxing their nets and other purposes, and is said to be the inspissated juice of a tree called the man or mannee tree.]

OUTRIDGE, J.

51 Hyawai gum or incense, from River Demerara.

[This gum is very fragrant, and supposed to be suitable for pastilles and similar purposes. It is said to be obtained from the *Icica heptaphylla*, Aubl.]

STUTCHBURY, J. S.

52 Laurel oil, from River Pomeroon, Essequibo.

[This oil, supposed to be obtained from *Oreodaphne opifera*, Nees, is extensively used by the natives in affections of the joints. It is also an admirable solvent of India rubber.]

53 Crab oil, from River Essequibo.

[This oil is obtained from the seeds of the tree yielding crabwood, (*Xylocarpus carapa*, Spr., or *Carapa guianensis*, Aubl.) It is used in the colony for burning, and is highly esteemed as a hair oil.]

DUGGIN, T. B.

54 Dari tree, seeds of the, from River Berbice.

[Candles are made from these seeds, said to be equal to wax. The tree abounds throughout the colony.]

SHIER, D.

55 Sandbox tree, seeds of, from Plantation Kitty, East Sea Coast, Demerara.

[The seeds of *Hura crepitans*, Lin. They are a drastic purgative, and contain a very limpid oil.]

KOCK, H. A.

55a Fruit of the lana tree.

[This fruit is the produce of *Genipa Americana*, Lin., a tree very abundant in the colony, and produces the Lana dye.]

55b Lana dye, from the River Berbice.

[This dye is the juice of the fruit of the *Genipa Americana*, Lin. The colour produced is a beautiful bluish black. The Indians use it in staining their faces and persons, and the effect lasts for several days.]

OUTRIDGE, J.

55c Indian paint, from the River Demerara.

[This pigment is prepared by mixing arnotto, the red viscous pulp surrounding the seeds of the *Bixa orellana*, Lin., with crab oil, the produce of the seed of *Carapa guianensis*, Aubl. It is used by the Indians for decorating their persons, and other purposes.]

DUGGIN, T. B.

56 Mora tree, bark of, from River Berbice.

[The *Mora excelsa*, a fabaceous tree, was discovered by Sir R. Schomburgk. It is one of the most magnificent trees in the forests of British Guiana. The wood is stated to be equal to oak of the best kind.—R. E.]

57 Hog plum tree, bark of, from River Berbice.

[Bark of *Spondias lutea*, Lin.; used as a tanning substance, and very abundant.]

SHIER, DAVID.

58 Courida tree, bark of, from Plantation Kitty, East Sea Coast, Demerara.

[Bark of *Avicennia nitida*, Lin.; used as a tanning substance, and extremely abundant on the sea coast.]

STUTCHBURY, J. S.

59 Hy-yarri or Hai-ari, fish poison, from River Demerara.

[Stem of *Lonchocarpus nicou*, Dec.; used by the natives to intoxicate fish for the purpose of capturing them.]

[This fish poison has been described as being employed in the following manner:—The natives beat the root with heavy sticks till it is reduced to shreds like coarse hemp. They then infuse it, and throw the infusion over the area of the river or pool selected. In about twenty minutes every fish within its influence rises to the surface, and is either taken by the hand or shot with arrows. A solid cubic foot will, it is stated, poison an acre of water, and the fish are said to be still wholesome for human consumption.—R. E.]

KOCK, H. A.

59a Fruit of yarrisara, from River Berbice.

[This is stated by the contributor, Dr. Koch, to be the fruit of a vine, found in the interior of the colony, and which he claims the merit of having discovered to be the chief ingredient of the celebrated Wourali poison.]

STUTCHBURY, J. S.

60 Angostura bark, from River Pomeroon, Essequibo.  
[Supposed to be obtained from *Galipea cusparia*, St. Hil. or *G. officinalis*, Hanc. Used as a febrifuge.]

61 Rhizophora racemosa, bark of, from East Sea Coast, Demerara.

[Bark of *Rhizophora racemosa*, Meyer; ascertained to be a very valuable remedy in cases of chylous urine.]

OUTRIDGE, J.

62 Trysala bark, from River Demerara.

[Used as an emetic by the Indians.]

STUTCHBURY, J. S.

63 Greenheart tree, bark of, from River Demerara.

[Bark of *Nectandra rodiaei*, Benth. Yields the alkaloid known as bibirine, a febrifuge.]

DUGGIN, T. B.

64 Greenheart tree, seeds of, from River Berbice.

[Used as a tonic and febrifuge. Occasionally, in times of scarcity, these seeds are grated and mixed with decayed wallaba (the wood of *Eperua falcata*, Aubl.), and used by the Indians as food.]

[The greenheart tree of Demerara will probably become of considerable commercial interest and value. In Class 2 of the United Kingdom will be found notices of the alkaloid bebeerine, obtained from its bark, which promises to become a substitute for quinine. Its botanical name is *Nectandra rodiaei*, and it belongs to the natural order Lauraceæ.—R. E.]

STUTCHBURY, J. S.

65 Guinea pepper, or grains of Paradise, from River Demerara.

[Seeds of *Amomum melegueta*, Roxb. These seeds are much superior to those imported from Africa.]

66 Alpinia nutans, seeds of, from River Demerara.

[These seeds (*Alpinia nutans*, Rosc.) resemble, and in some respects possess, the properties of cardamoms.]

SHIER, DAVID.

67 Physic nuts, seeds of, from Georgetown, Demerara.

MANGET, Mrs.

68 Physic nuts, seeds of, from Georgetown, Demerara.

[These physic nuts are the produce of different trees, but are possessed of similar emetic and purgative properties, and are frequently used as a domestic medicine by the black population of the colony.]

ARRINDELL, Mrs.

69 Quassia amara, from Plantation Zeelandia, Wake-naam, River Essequibo.

[This is the produce of *Quassia amara*, Lin. It is distinct from the quassia of the shops, and is extensively and successfully used in the colony as a tonic and febrifuge. It is very abundant.]

STUTCHBURY, J. S.

70 Boeiri, bush rope, from River Demerara.

[This bush rope is plentiful in the interior of the colony, and is a favourite remedy of the Indians in pectoral complaints. It is exceedingly aromatic, and forms an excellent ingredient in stomachic bitters.]

BLAIR, DANIEL.

71 Cotton, cleaned, from Plantation Batavier, Mahaica River.

72 Cotton, uncleaned, from Plantation Batavier, Mahaica River.

[These specimens were obtained from wild or self-sown

plants, the remains of the cotton cultivation on Plantation Batavier, which was abandoned about twenty-five years ago.]

NETSCHER, A. D. VAN DER GON.

73 Cotton, uncleaned, from Plantation Klein Pouderoyen, River Demerara.

BEE, J. F.

74 Cotton, hard seed, cleaned, Plantation Woodlands, River Mahaica, Demerara.

HUGHES, P.

74a, 74b Mexican white seed. Large and small green seed; large and small kidney; loose black seed; all from Plantation Anna Regina, Essequibo.

BEE, J. F.

75 Cotton, loose seed, cleaned, Plantation Woodlands, River Mahaica, Demerara.

76 Cotton, loose seed, uncleaned, Plantation Woodlands, River Mahaica, Demerara.

[The above specimens of cotton are the produce of *Gossypium arboreum*, Lin., and other arborescent species. Sir Robert Schomburgk, in his description of British Guiana, makes the following observations on the subject of the cultivation of cotton, p. 103:—"The indigenous cottons are very numerous, and the Indian has generally a few shrubs of that useful plant around his hut. However, I have seen the industrious Macusi cultivating it more extensively. The hammocks which the Indians manufacture of it are valued for their strength and durability, and are considered superior to the European article. Like the staples before enumerated, cotton has been only cultivated by the colonists at the coast regions; but its cultivation has in a great measure been abandoned, because our cottons, raised by free labour and in a British colony, were undersold by those produced by slavery in the United States. If, with regard to the abundance and cheapness of labour, British Guiana were put on the same footing as slave states in America, an inexhaustible supply of cotton of every description might be produced. There is no doubt that all kinds of cotton, from the best long staple down to the finest short staple, might be cultivated in the colony, as the kind which does not thrive on one soil or climate might be produced in another. An extent of sea-coast of 280 miles from the river Corentyne to the mouth of the Orinoko, would produce cotton vying with the best in the world. I doubt the opinion that the finest cotton will not grow at a greater distance than twenty miles from the sea. I have sent samples of the wild cotton from the interior to the colony which were admired by competent judges for their fine long staple and silky appearance. No care whatever had been bestowed upon the cultivation of these plants which grew at a distance of 300 or 400 miles from the coast. Although the growth of the plant was not luxuriant, it was covered abundantly with cotton of the most excellent quality; indeed it would be highly advisable to the cotton growers at the coast to exchange the seeds."]

ROSS, E. C.

76a Silk cotton, loose and in pod.

76b Silk cotton, bale of, from Georgetown, Demerara.

[Obtained from the seed vessels of the silk cotton tree (*Bombax Ceiba*, Lin.). It has been exported to the United States, and used in the manufacture of hats.]

DAVISON, W.

77 Plantain fibre, from Plantation Vigilance, East Sea Coast, Demerara.



NETSCHER, A. D. VAN DER GON.

78 Plantain fibre, from Plantation Klein, Pouderoyen, River Demerara.

[This fibre is produced from the stems of plantain and banana trees (*Musa paradisiaca* and *sapientum*), and might be obtained in very large quantities from the plantain cultivation of the colony. It is calculated that upwards of 600 lbs. weight of fibre might be produced annually from each acre of plantains, after reaping the fruit crops. At present the stems of the plantain trees, when cut down, are allowed to rot on the ground. If a remunerative price could be realized for this fibre, a new branch of industry would be opened up to the colonists.]

*Note.*—In addition to the above-mentioned specimens, a barrel of the fibre, contributed by W. Davison, has been sent for experimental purposes. It may be proper to mention that in 1846, a gentleman visited this colony, and exhibited several specimens of cloth of a beautiful silky texture, and specimens of paper of superior quality, manufactured from the fibre of plantains grown in the Jardin des Plantes.]

DE BURTON, J.

79 Silk grass, fibre of, from Plantation Vigilance, East Sea Coast, Demerara.

[This fibre is obtained from *Agave vivipara*, Linn.]

DUGGIN, T. B.

80 Silk grass, fibre of, from River Berbice.

[This fibre is obtained from a species of *Bromelia*. It is very strong, and is used by the Indians to make bow-strings, nets, cordage, &c.]

81 Fabisiri, fibre of, from River Berbice.

[This fibre is derived from the Ita palm (*Mauritia flexuosa*, Linn.) It is used by the Indians for making hammocks, cordage, &c.]

BEE, J. F.

82 Mohoe, fibre of, from Demerara.

[Obtained from a tree of the mallow tribe (*Thespesia populnea*, *Correa*, or *Hibiscus elatus*, Swartz?) It is very strong, and used for making cordage, coffee bags, &c.]

83 Table top, including 84 different specimens of woods, the growth of the colony, viz. :—

|                                   |                 |
|-----------------------------------|-----------------|
| 1 Sand Mora.                      | 23 Waiki.       |
| 2 Lana.                           | 29 Siridani.    |
| 3 Itikiribouraballi (young).      | 30 Hooboballi.  |
| 4 Kretti, or bastard silverballi. | 31 Bannia.      |
| 5 Kurara.                         | 32 Hyawaballi.  |
| 6 Kakaralli.                      | 33 Tatabo.      |
| 7 Brown silverballi.              | 34 Masaranuni.  |
| 8 Yellow silverballi.             | 35 Cabacalli.   |
| 9 Youraballi.                     | 36 Pritti.      |
| 10 Saouari.                       | 37 Canuballi.   |
| 11 Crabwood.                      | 38 Mora.        |
| 12 Yerara.                        | 39 Letterwood.  |
| 13 Purpleheart.                   | 40 Kucahara.    |
| 14 Simaruba.                      | 41 Wamara.      |
| 15 Gomarrow.                      | 42 Kamakasa.    |
| 16 Cedar white.                   | 43 Hiaballi.    |
| 17 Locust.                        | 44 Determa.     |
| 18 Coutaballi.                    | 45 Wadaduri.    |
| 19 Carahurri.                     | 46 Rosewood.    |
| 20 Huwassi.                       | 47 Saka.        |
| 21 Armiosi.                       | 48 Kerla.       |
| 22 Suradanni.                     | 49 Kamacusack.  |
| 23 Asepoca.                       | 50 Cedar, red.  |
| 24 Akaraki.                       | 51 Wild orange. |
| 25 Hymakusi.                      | 52 Guava.       |
| 26 Ducalaballi.                   | 53 Logwood.     |
| 27 Turiballi.                     | 54 Tabicushie.  |
|                                   | 55 Coffee.      |
|                                   | 56 Murwaana.    |

|                     |                                  |
|---------------------|----------------------------------|
| 57 Kartaballi.      | 72 Greenheart.                   |
| 58 Washiba.         | 73 Hya-hya.                      |
| 59 Kimaasamasa.     | 74 Cabbage tree.                 |
| 60 Curbacalli.      | 75 Wallaba.                      |
| 61 Bartaballi.      | 76 Yarri yarri.                  |
| 62 Accourib root.   | 77 Waremia.                      |
| 63 Wara couri.      | 78 Hooboballi.                   |
| 64 Ducalli.         | 79 Cannella, or wild spice wood. |
| 65 Arawica.         | 80 Itikiribouraballi, old.       |
| 66 Bangeo or ebony. | 81 Bully tree.                   |
| 67 Hackia.          | 82 Silberdani.                   |
| 68 Kurahara.        | 83 Brown silverballi, light.     |
| 69 Calabash.        | 84 Kofassa.                      |
| 70 Kuracurara.      |                                  |
| 71 Towraneroo.      |                                  |

[It will be seen from this table that British Guiana produces many woods highly ornamental and useful for cabinet-making and upholstery.]

OUTRIDGE, J.

84, 84a Mora, transverse and vertical sections, from River Demerara.

[The tree (*Mora excelsa*) producing this wood frequently reaches a height of upwards of 100 feet. It grows abundantly on barren sand reefs. It is tough, close and cross grained, and is peculiarly adapted for ships' timbers and planks, for which purpose it is extensively used. The trunk of this tree, when of the height of from 40 to 50 feet, will square from 18 to 20 inches, but when grown to that size it is generally faulty. The specimens sent are from a tree supposed to be from 30 to 40 years old.]

85 Greenheart, transverse section.

STUTCHBURY, J. S.

85a Greenheart, vertical section, from River Demerara.

[The greenheart tree (*Nectandra rodiaei*) is very abundant, and its timbers, squaring from 18 to 24 inches, can be procured without a knot from 60 to 70 feet long. It is a fine-grained hard wood, well adapted for the planking of vessels, house frames, wharves, bridges, and other purposes, where great strength and durability are required. Mr. Manifold, engineer of the Demerara Railway, states that this is the best timber for resisting tensile and compressive strains, and is therefore well adapted for kelsons for ships and beams of all kinds.]

OUTRIDGE, J.

85b, 85c Specimens of black greenheart; transverse and vertical sections.

[The timber of this tree is used for ship-building, planks, &c., and is considered more durable than the common greenheart. The specimens sent are from a tree supposed to be about 50 years old.]

BUCHANAN, A.

86, 86a Purpleheart, transverse and vertical sections, from River Essequibo.

[The purpleheart (*Copaifera pubiflora* or *bracteata*?) yields a timber possessing great strength, durability, and elasticity, and is described by Lindley as "invaluable for resisting the shock of artillery discharges, on which account it is employed for mortar beds." It is used for windmill shafts, rollers, and machinery.]

[Like the greenheart, the purpleheart tree of Demerara belongs to the natural order *Fabaceae*. It is found abundantly in the forests of Guiana. The timber is extremely valuable for certain purposes, as for the carriages of artillery, from its extraordinary toughness and capacity to resist violent concussions. The tree is the *Copaifera pubiflora* and *bracteata*. In addition to its timber it is

valuable for the quantity of balsam which gushes from its bark on being wounded.—R. E.]

OUTRIDGE, J.

87, 87a Kakaralli, transverse and vertical sections, from River Demerara.

[This wood is very plentiful, and it has been proved that it is more durable than greenheart in salt water, as it possesses the quality of resisting the depredations of the sea-worm and barnacle. It may be had from 6 to 14 inches square. The specimens sent are from a tree supposed to be about twenty years old.]

88, 88a Wamara, or brown ebony, transverse and vertical sections, from River Demerara.

[This wood is hard and cross-grained, consequently not apt to split; it would, therefore, answer various purposes in naval architecture. It may be had from 6 to 12 inches square, and from 40 to 60 feet long. The Indians make war clubs of it. The specimens sent are from a tree supposed to be about twenty years old.]

89, 89a Wooroballi, transverse and vertical sections, from River Demerara.

[This wood is very close and fine grained, is easily worked, takes a high polish, and is much used in the colony for furniture. It may be had from 15 to 20 inches square, 40 to 70 feet long. The specimens sent are from a tree supposed to be about twenty years old.]

BUCHANAN, A.

90, 90a Wallaba, transverse and vertical sections, from River Essequibo.

[This wood is produced from *Eperua falcata*, Aubl., a tree very abundant throughout the colony. It is hard, splits freely, and is very durable from being impregnated with a resinous oil. It is used for house frames, palings, shingles, staves, &c. It has been ascertained that a roof well shingled with this wood will last upwards of forty years. It may be had from 15 to 20 inches square, from 30 to 40 feet long.]

DUGGIN, T. B.

90b Wallaba, tecuba, or hart, River Berbice.

[This wood is the heart of the upper portion of the trunks of Wallaba trees which have been felled in the forests, and from which the sap wood has decayed. These are much used as paling posts and for other outdoor purposes, being found to be so durable as to be almost imperishable. They are about to be used as sleepers on the Demerara Railway, for which purpose it is supposed they will prove to be peculiarly well adapted. The defect of Wallaba and of its tacouba is its inability to bear great lateral strain. It therefore should not be used for beams longer than 12 feet.]

[Sir R. Schomburgk states in reference to this tree,—the Wallaba tree of Guiana,—that its wood is deep red, frequently variegated with whitish streaks, hard, heavy, shining, and impregnated with an oily resin which makes it very durable. Its botanical name is *Eperua falcata*.—R. E.]

OUTRIDGE, J.

91, 91a Bully tree, transverse and vertical sections, from River Demerara.

[The tree yielding this wood is supposed to be a species of *Mimusops*. It is found throughout the colony, but most abundantly in the county of Berbice. It is of great size, and squares from 20 to 30 inches, and may be obtained from 20 to 30 feet long. The weather has little effect upon it, and it is employed for house frames, posts, floors, &c.

The upper portion of the trunk and branches are manufactured into shingles, wheel-spokes, palings, &c.]

92, 92a Silverballi, yellow, transverse and vertical sections, from River Demerara.

[This wood is supposed to be derived from a species of *Nectandra*. It is light and floats, and contains a bitter principle, which protects it from the attacks of worms. Hence it is much used for the outside planking of colony craft. It is also used for booms and masts. It grows to a great size, but then is often hollow. It will, however, square sound from 10 to 14 inches, from 40 to 50 feet long.]

FAUSET, T.

93 Silverballi, portion of the planking of a drogher.

[This specimen formed part of the outside planking of a drogher employed in the conveyance of produce in this colony, and is known to have been exposed to the action of salt water during a period of 20 years.]

94 Silverballi, portion of the planking of a punt.

[This specimen formed part of the bottom of a punt known to have been used in the Demerara River for a period of 30 years and upwards.]

BUCHANAN, A.

95, 95a Camara, or tonquin bean, transverse and vertical sections, from River Essequibo.

[This wood is obtained from *Dipteryx odorata*, the tree which produces the well-known Tonquin bean. It is hard, tough, and durable in an eminent degree; and it is said that a portion of its timber, one inch square, and of a given length, bears 100 lbs. more weight than any other timber in Guiana of the same dimensions. It is therefore peculiarly adapted for any purpose where resistance to great pressure is the object, and for shafts, mill-wheels, or cogs. It will square from 18 to 20 inches, from 40 to 50 feet long. This tree is, however, not very plentiful in this colony.]

96, 96a Saouari, transverse and vertical sections, from River Essequibo.

[This wood is obtained from *Caryocar tomentosum*, Dec. or *Pekea tuberculosa*, Aubl., the tree which yields the delicious nut known as the Saouari, or Sewarri nut. It greatly resembles in its properties the mora, being excellent for ship-building, mill-timbers, and plank, and may be had from 16 to 20 inches square, from 20 to 40 feet long.]

OUTRIDGE, J.

97, 97a, 97b Yaruri, or paddlewood, transverse and vertical sections, from River Demerara.

[This wood is obtained from *Aspidosperma excelsum*, Benth. The whole tree, from 5 to 6 feet in diameter, and, to the first branches, about 50 feet in height, has the appearance of being fluted, or as if it consisted of a fasciculus of numerous slender trees. The fluted projections of the trunk are used by the Indians for the construction of their paddles. The wood is light, elastic, and very strong, and preferred to any other for cotton gin-rollers.]

98, 98a Hackia, lignum vitæ, transverse and vertical sections, from River Demerara.

[This wood, known in the colony as *Lignum vitæ*, is said to be obtained from *Guaicum officinale*, Lin.; but this seems doubtful, as the tree producing the wood attains a height of from 50 to 60 feet, and squares 16 to 18 inches, whilst the *Guaicum officinale* is described as a comparatively small tree about 4 or 5 inches in diameter. It is used for mill-cogs and shafts. The specimens sent are from a tree supposed to be about 40 years old.]

## DUGGIN, T. B.

99, 99a Lana, transverse and vertical sections, from River Berbice.

[This wood is obtained from *Genipa Americana*, Lin., the fruit of which yields the Indian pigment known as Lana dye. The tree is very high, and the trunk will frequently square from 14 to 18 inches. The wood is close grained, and is not liable to split.]

100, 100a Mammee apple, transverse and vertical sections, from River Berbice.

[This wood is obtained from the *Mammea Americana*, Lin., which produces the Mammee apple, or wild apricot of South America.]

[The Mammee apple tree is an ally of the celebrated Mangosteen tree. It is valued for the medicinal properties of its seeds. The flowers are distilled and produce a kind of alcoholic extract. The sap, when fermented, forms a sort of wine. It is sometimes called the wild apricot tree.—R. E.]

101, 101a Hyawa, transverse and vertical sections, from River Berbice.

[This wood is obtained from the *Icica heptaphylla*, Aubl., or incense tree, yielding the gum Hyawa.]

102, 102a Corkwood, transverse and vertical sections, from River Berbice.

## PONTIFEX, GEORGE.

102b Corkwood tree, abutment from near the root, from Troolie Island, River Essequibo.

[This wood is supposed to be obtained from *Pterocarpus Draco*, Lin., or *P. suberosus*, Pers., and is used chiefly as floats for fishing nets.]

## BEE, J. F.

103, 103a Courida, transverse and vertical sections, from Plantation Woodlands, River Mahaica.

[This wood is obtained from *Avicennia nitida*, Jac., a tree of surprising rapidity of growth. These specimens are from a tree five years old. The wood is perishable when exposed to the atmosphere, but is very durable under ground, and is therefore used as foundations for buildings.]

## OUTRIDGE, J.

104, 104a Itikiribouraballi, transverse and vertical sections.

[This wood is supposed to be obtained from *Machaerium Schomburgkii*, Benth. The trunk grows to the length of from 30 to 40 feet, and squares from 12 to 16 inches. It is used chiefly for cabinet work.]

105, 105a White cedar, or warracoori, transverse and vertical sections, from River Demerara.

## BEE, J. F.

105b, 105c White cedar, or warracoori, transverse and vertical sections, from River Mahaica, East Sea Coast, Demerara.

[This wood is obtained from *Icica altissima*, Aubl. It is light, easily worked, and very aromatic. Sir Robert Schomburgk states that one of his canoes, 42 feet long and 5½ feet wide, was made from a tree of this species. It is used for oars and paddles, and for boards for inside work of houses. During the American war it was used for staves of sugar hogsheads.]

## OUTRIDGE, J.

106, 106a Suradanni, transverse and vertical sections, from River Demerara.

[It is much used for timbers, rails, and covering boards for colony craft, and for naves and felloes of wheels. It

is also made into canoes by the Indians. It will square from 14 to 18 inches, from 30 to 40 feet long.]

107, 107a Determa, transverse and vertical sections, from River Demerara.

[This wood is used for masts, booms, and planking for colony craft; and as insects do not infest it, it is well adapted for chests, wardrobes, &c. It will square from 14 to 16 inches, from 40 to 60 feet in length.]

108, 108a Crabwood, transverse and vertical sections, from River Demerara.

[This wood is obtained from *Xylocarpus carapa*, Spreng., or *Carapa guianensis*, Aubl., the seeds of which yield the crab oil. It is a light wood, and takes a high polish, and is used for masts and spars, flooring, partitions, and doors of houses. There are two varieties, the red and white. These specimens are the white. It squares from 14 to 16 inches, from 40 to 60 feet long.]

109, 109a Koquerettaballi, transverse and vertical sections, from River Demerara.

[This wood forms excellent rafters and beams for cottages. It grows from 20 to 30 feet long, and from 4 to 6 inches in diameter.]

110, 110a Coutabally, transverse and vertical sections, from River Demerara.

[The tree which yields this timber grows upon sand-hills; the wood is very hard and durable if not exposed to the weather; it is plentiful, and principally used for house frames, and will square 12 inches, from 30 to 40 feet long.]

111, 111a Blackheart, transverse and vertical sections, from River Demerara.

[This is a good wood for house frames and for making furniture. It will square from 6 to 7 inches, from 20 to 30 feet long.]

112, 112a Cabacalli, transverse and vertical sections, from River Demerara.

[This wood is impregnated with a bitter principle, which defends it against worms; it lasts well under water, and is much used for planking colony craft. It must, however, be fastened with copper nails. It will square from 12 to 16 inches, or even more, from 40 to 45 feet long.]

113, 113a Yarri yarri, or lancewood, transverse and vertical sections, from River Demerara.

[This tree is stated by Schomburgk to be *Duquetia quitarensis*, Lindl., a slender tree found in tolerable abundance in the interior of the colony. The wood possesses much toughness and elasticity, and is used for gig shafts, and, when small, for whip handles and fishing rods. The Indians make their arrow points of it. It grows from 4 to 6 inches in diameter at the lower end, and from 15 to 20 feet long.]

[Sir R. Schomburgk states that the hard, tough, and elastic wood, so highly esteemed for the shafts of carriages and other coach-building purposes, is produced by this tree, yarri yarri. It belongs to the natural order *Anonaceae*, and its botanical title is *Duquetia quitarensis*.—R. E.]

114 Torchwood, from River Demerara.

[Supposed to be obtained from a species of *Amyris* or *Icica*. When beaten, so as to separate the fibre, the branches are used as torches by the Indians.]

115, 115a Tooroo, transverse and vertical sections, from River Demerara.

[This tree is a species of palm. It grows to the height of from 50 to 70 feet. Its woody outside is used by the

cabinet-makers for inlaid work, walking-sticks, billiard cues, &c.]

BEE, J. F.

116 Coffee tree, portion of the trunk, from Canal No. 2, River Demerara.

116a Coffee tree, vertical section, from Canal No. 2, River Demerara.

117, 117a Tigerwood, transverse and vertical sections, from River Demerara.

[This is the heart of the wood Itikiribouraballi, and is a valuable wood for cabinet-making.]

STUTCHBURY, J. S.

117b, 117c Transverse and vertical sections of letter wood, from the River Corentyne.

[This is obtained from *Brosimum Aubletii*, Poep, or *Piratinera guianensis*, Aubl., and is one of the costliest woods which Guiana possesses. It is of a beautiful brown colour with black spots, which have been compared to hieroglyphics; the spotted part being only peculiar to the heart, which is seldom more than 12 to 15 inches in circumference. It is adapted for cabinet work of small size and for veneering only. From its extreme hardness it is difficult to work, and therefore little used.]

OUTRIDGE, J.

117d, 117e Transverse and vertical sections of the saka or bastard purple heart-wood, from River Demerara.

[Used for furniture.]

117f, 117g Transverse and vertical sections of the itaballi tree, from River Demerara.

[The tree which produces this wood is *Vochysia guianensis*, Aubl., and is used by the Indians for making corials.]

117h, 117i Transverse and vertical sections of the waduri or monkey-pot tree, from River Demerara.

[The tree which produces this timber is the *Lechytis grandiflora*, Aubl., and is plentiful. The wood is used for furniture, staves, &c. The specimens sent are from a tree supposed to be about 25 years old.]

117j, 117k Transverse and vertical sections of the hywaballi tree, from River Demerara.

[This tree is scarce. This wood, known as zebra wood, is used for furniture. The specimens sent are from a tree supposed to be about 30 years old.]

117l, 117m Transverse and vertical sections of the silbadani tree, from the River Demerara.

[This wood is used for furniture. The specimens sent are from a tree supposed to be about 20 years old.]

117n, 117o Transverse and vertical sections of the simiri, or locust tree, from River Demerara.

[The tree producing this wood is *Hymenonea courbaril*, Lin., and is plentiful in various parts of the colony. It often attains a height of from 60 to 80 feet, with a trunk from 7 to 8 feet in diameter. The wood is hard and compact, and its durability recommends it for mill rollers and similar purposes. The Indians make "woodskins" out of the bark. The specimens sent are from a tree supposed to be above 100 years old.]

117p, 117q Transverse and vertical sections of the towraneroo or bastard bully tree, from River Demerara.

[It is very plentiful, and is used for framing timber, spokes, &c. It will square 25 inches, from 40 to 50 feet long. The specimens sent are from a tree supposed to be about 50 years old.]

117r, 117s Transverse and vertical sections of the Marisiballi tree, from River Demerara.

[This tree is plentiful, and is used chiefly for spars. It

will square from 13 to 14 inches, from 30 to 40 feet in length. The specimens sent are from a tree supposed to be about 20 years old.

With regard to the timber trees of this colony, Sir Robert Schomburgk, in his description of British Guiana, published in 1840, p. 116, observes:—"I cannot conclude my observations on the capabilities of British Guiana, without referring once more to the importance of its timber trade, and the source of wealth which might be derived if there were a sufficient number of woodcutters. At present, if we make a few exceptions, it is only carried on by individuals who enter upon it with but little capital and slender means; and yet there are instances where the industrious and sober have reaped riches. The fitness of the timbers for naval architecture is unparalleled, and in some instances is said to surpass the teak. The greenheart, the mora, and souari or sewarri, of all other woods, are most unquestionably the best adapted for ship-building. Within the last ten or twelve years a considerable quantity of brown greenheart has been sent to Liverpool and Greenock; and I have been told that builders and others interested in shipping are now of opinion, after about ten years' trial of the wood, that in strength and durability it is superior to any oak, and it actually commands a higher price. Had these woods been introduced and extensively employed in the Royal Dockyards fifteen or twenty years ago, it is the opinion of competent judges that we should not now hear much of dry-rot and Kyan's patent; and not to mention that rapid decay of vessels built of English and African oak, and the consequent frequent repairs, with what saving to Government would it not have been connected! If, therefore, the attention of the Navy Board could be drawn to the important fact that British Guiana can furnish the finest and most durable wood in the world, in sufficient quantities to supply all the ship-building establishments in Great Britain, a double benefit would arise from it, namely, the saving to Government and the increased demand for the natural productions of the colony. The first experiment might be made to establish a dockyard for the repair of such of Her Majesty's cruisers on the West India station as draw not more than 18 or 19 feet water. The outlay of such an establishment would be trifling if the importance of ultimate success be considered. The woods which are qualified for ornamental purposes vie in elegance, if polished, with any in the world. The want of labourers is the great cause that these treasures lie comparatively hidden, and have scarcely excited attention. The demand in the colony has been so great for native woods, that those who are at present employed in that trade are not able to meet it." It may be proper to add to this statement from Sir Robert Schomburgk's work, the fact, that in consequence of British Guiana being so extensively intersected by navigable rivers, ships of considerable burthen may load in the immediate vicinity of most of the wood-cutting establishments.]

#### MISCELLANEOUS ARTICLES.

STUTCHBURY, J. S.

118 Tonquin bean, from River Demerara.

118a Tonquin bean, in capsules, from River Demerara.

[This bean is the fruit of *Dipterix odorata*, Willd., and is principally used to impart fragrance to snuff.]

DUGGIN, T. B.

119 Job's tears (bud-like seeds), from River Berbice.

[This very peculiar seed of a grass is the fruit of *Coix*

in Guiana for ornaments,

ars, is applied to the stony  
*Coix lachryma*. They are  
posed medicinal qualities.

ORGE.

plantation Ruminveld, River

nit of *Sapindus saponaria*,  
s, necklaces, bracelets, &c.]

Mrs.

Georgetown, Demerara.

*hrina corallodendron*, Lin.,  
urposes.]

DAVID.

or seeds of the "Tous les

to diminish its cubic contents, and when stretched to its  
utmost length, its capacity will be diminished by nearly  
one-third: hence its applicability for effecting expression.]

BEE, J. F.

134 Etami, or cassava-sifter, used by the Indians, made  
of the ita palm.

BARKLY, Mrs.

135 Model of an Indian house, and twenty-eight minia-  
ture models of furniture, implements, &c., as used by the  
natives.

ROSE, Miss.

136 Cotton hammock.

[This is made of the wild cotton from the interior of  
the colony, referred to in Sir R. Schomburgk's description  
of British Guiana as remarkable for its fine long staple,  
silky appearance, and excellent quality. Full-sized ham-  
mocks made of this material command a price from three  
to four times higher than those of English manufacture.]

RIES, BERNHARD.

an cotton, from River Pomeroun.

also the wild cotton of the interior.]

STUTCHBURY, J. S.

38, 19 Fishing nets of silk grass, of Indian manu-  
facture.

DENNIS, GEORGE.

10 Basket, used by the Indians when travelling, slung  
on their shoulders. Entire wardrobe of a female Indian  
of the Warrow tribe.

DUGGIN, T. B.

141 Indian war club, from River Berbice.

ARNOTT, ROBERT.

142, 143 Indian war clubs, from River Demerara.

144 Blowpipe and quiver, with poisoned arrows, used  
by the Indians.

[The inner tube of the blowpipe is a single internode  
of the *Arundinaria Schomburgkii*, Benth. These inter-  
nodes are sometimes 16 feet in length. The arrow is  
inserted into the tube, having a dossil of cotton around  
its lower end, aim is taken, and the arrow projected by a  
sudden expiration. Accompanying the quiver, there is  
the maxilla of a fish which is used for partially cutting  
the poisoned end of the arrow, so that that portion may  
break off and remain in the wound. This cutting is effected  
by rapidly turning the arrow between the teeth of the  
maxilla.]

145, 145a Bows and arrows, bows made of washiba,  
used by the Indians.

DUGGIN, T. B.

146 Winna, used by the Indians for enclosing tobacco,  
in the form of sheroots, for smoking, and said to be made  
of the rind of the fruit of the Manicole palm, *Areca  
manicot*, Lodd., from River Berbice.

147, 147a Buck pot, used in preparing pepper pot.

[These pots are made by the Indians, of a peculiar  
description of clay found on the banks of the rivers in  
various parts of the colony.]

148 Indian fly-brush.

148a Walking-stick of letter-wood, carved by the In-  
dians.

OUTRIDGE, J.

148b Adada, or wood-skin, from the River Demerara.

[This is the bark of the purple-heart tree, called by the  
Indians *Maricayana*. Sir R. Schomburgk says:—"They  
take off the bark of this tree when fresh cut down, and  
with very little trouble convert it into a canoe, commonly  
called a 'wood-skin,' some of which are large enough to  
carry 20 to 25 persons with perfect safety on smooth

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Soap berries,  
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are the seeds  
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usly supposed to be *C.*

*ilis*, and *C. Achiras*, a

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les mois starch of commerce.

y, and could be cultivated to

MORISON & KNOX.

123 Inglass, from Gilbagre, coast of Demerara.

[This is the sound of the *Silurus* —? a fish very  
abundant in the estuaries of the rivers of this colony.]

BEE, J. F.

124 Honey, from Plantation Woodlands, River Ma-  
ca.

This is the produce of a small wild bee, which is sting-  
and easily domesticated. The honey is deposited  
in separate pouches, and may be removed once every  
month by making a puncture in the bottom of the pouch,  
from which it readily flows, which opening, the insect  
afterwards speedily closes up.]

BARKLY, Mrs.

125 Ornamented hammock, made of silk grass, supposed  
to be the fibre of a species of *Bromelia*, or of *Agave vivi-  
para*, Lin., ornamented with the feathers of the toucan,  
macaw, &c.

STUTCHBURY, J. S.

126 Ita, or eta palm hammock, made of the fibre of  
*Mauritia flexuosa*, Lin.

127 Ropes to the same, made from silk grass.

BARKLY, Mrs.

128 Hat, made of the bark of the ita palm.

129 Indian head dresses, ornamented with feathers,  
worn by the chiefs.

HOLMES, W. H.

130 Case of pagalas, or packalls, made of the outer rind  
of the ita palm, and much used in the colony as baskets.

131 Shaak-shaak, from River Demerara. A child's toy,  
and used by the Indians in their dances.

132 Fans, made of the ita palm.

SHERR, DAVID.

133 Matapi, or cassava squeezer, made of the ita  
palm.

[Used by the Indians for expressing the juice from  
grated cassava. Before being filled, it is compressed as  
far as possible so as to increase its diameter; it is then  
filled and suspended from a beam, and a lever is inserted  
into the lower loop, to the long end of which a weight is  
applied, by which the matapi becomes elongated. It will  
be observed that the change of form in the vessel will tend

water." During the month of February of the present year, the contributor and two other persons, weighing together not less than 500 lbs., descended or "shot" the Rapids, about 100 miles above the estuary of the River Demerara, in this wood-skin, in perfect safety. The seats commonly made use of in wood-skins consist of two or more light cylindrical pieces of wood, the ends of which are notched and rest upon the gunwale. The wood-skin sent measures 18½ feet in length, and about 28 inches in width. Accompanying it are two paddles made of yaruri, or paddle-wood.]

149 Quack, or covered basket, of negro manufacture, made of a palm called moucourou.

150 Basket, such as is used in coffee picking, of similar manufacture.

151 Hand basket, of negro manufacture.

152 Two baskets, of negro manufacture, made of the cabbage palm, *Areca montana*, Lodd.

153 Calabashes, the shell or rind of the fruit of *Crescentia cujete*, Linn.

STEELE, MATTHEW.

154, 154a Door-locks, made of greenheart, and in use among the creoles of this colony.

155, 155a, 155b Door-locks, made of crabwood, and in use among the creoles of this colony.

BEE, J. F.

156 Walking-sticks, made from the outer part or rind of the tooroo palm, from the River Demerara.

156a A box containing eighty small specimens of the woods of the colony.

157, 157a Diagrams showing the course of temperature at Georgetown, Demerara, during the five years 1846 to 1850, and the mean range thereof, &c.

158 Round table, composed of many kinds of wood, the growth of the colony.

HOPKINSON, JONATHAN, ESQ.

159 Japanned cup and plate, made from the fig-tree.

RIDGWAY, A. F., ESQ.

160, 161 Stuffed birds:—Toucan; blue parrot, from the Essequibo; yellow-bellied trojan. Skins of monkey, panther, &c.

COLLING, JOHN, ESQ.

162 Model of a Birch Indian's house and family.

RIDGWAY, A. F., ESQ.

163 Cotton grown by W. Finlaison, Esq., Fullerswood Park, Blacknow, Jamaica.

164 Specimens of the snake-nut of the colony.

[This remarkable vegetable production was discovered in Demerara by Sir R. Schomburgk. The embryo of the nut bears a strong resemblance, from its being spirally twisted, to a snake curled up. The tree producing this singular nut is one of the soap-nuts, and has been called by its discoverer *Ophdocaryon paradoxum*.—R. E.]

164a A native bag of coloured beads.

A necklace worn by the natives, which is composed of teeth of the wild boar (peccary?)

Another, of dried seed-vessels of a remarkable shield form, and very hard.

Another, of black polygonal beads, apparently of the wood of the Dari tree.

A throat ornament composed of black feathers, probably of the black toucan.

An "eatou," or Indian lady's wardrobe, being a sort of basket worked in beads, the pattern of which is a running square border of precisely that character which is commonly called "Egyptian," and of constant occurrence in Greek sculptures and paintings.

Pair of native sandals, the thongs as well as the soles of which are made of the bark of the palm tree.

Various war clubs and other weapons of hard and close-grained woods grown in the colony.

Bottle containing an aquatic fig-like plant, met with on the waters of the Guiana rivers. It is of a highly noxious nature, and by some supposed to be the plant yielding the Warouli poison.

A native ear-ring, composed of a long tooth, with a natural groove or furrow on its interior face, inserted on a piece of reed of very light texture.

A comb for the hair, made of the outer wood of the Tooroo palm.

Dried skin, 18 feet long, of a *Boa constrictor*.

[This skin exhibits numerous perforations by a sword, with which the boa was despatched, immediately after crushing to death and swallowing a negro boy, who had accompanied an English gentleman on a fishing excursion near the junction of the Essequibo river with one of its tributaries.]

A small case or quiver of hollow cane, suspended by a cord, spun from the wild cotton.

[The case contains an arrow point, or head, being a small thin splint of wood, little more than half an inch in circumference, and five or six inches long, hardened in the fire. The extremity has been steeped in the warouli poison. This arrow head is attached to the shaft by a thong or filament so contrived, that on striking an object it detaches itself, remaining in the wound, and thus enabling the native hunter to recover his weapon.]

Quayen, a native Indian squaw's dress.

Snake-nut, supposed to be the seed of a water-plant, which, when ripe, sinks, but, from some cause not germinating, again rises to the surface. Same species as horsechestnut. Grows on a vine near the rivers.

Wari, or warouli poison, made from a vine; the wood is chopped small, and boiled down to a paste.

## FALKLAND ISLANDS.

THE only contributions from these islands are the private collection of one exhibitor. This, however, represents, more or less completely, the natural features of the islands, since it includes sketches illustrative of their geology, botany, and mineralogy.—R. E.

1 WHITTINGTON, G. T., *Woking, Surrey*—Proprietor.

Portfolio containing fourteen sketches of remarkable places, geological formations, plants, &c., of these islands.

Portfolio containing twenty-seven sheets: specimens of grasses, sheep's wool, &c., produce of these islands.

Specimens of coal, copper, sandstone, quartz, spar, pebbles, rock, peat, lichens, orchilla weed, &c., from the same.



V.

BRITISH POSSESSIONS  
IN AUSTRALASIA.

EASTERN ARCHIPELAGO.—AUSTRALIA.  
VAN DIEMEN'S LAND.—NEW ZEALAND.

THE countries represented under this head, and above enumerated, have sent interesting collections of native produce of different kinds. Of these, the collection from Van Diemen's Land is the most extensive, comprising objects sent by a considerable number of exhibitors. In each instance, however, the attempt had been made to send for exhibition such articles as represented best the peculiar products of the country exhibiting. Many of the objects are of great importance to the merchant seeking a new source for known materials.—R. E.

EASTERN ARCHIPELAGO.

SOUTH AREA, S. 32.

THE Eastern Archipelago, so recently opened to civilization and secure commercial enterprise, is represented by three exhibitors, whose contributions consist of native cloth, a series of Malay paintings, a model of a pirate boat. In addition, is a great variety of natural products, vegetable and mineral. Among the former, gutta percha and its varieties will form an interesting study. The gums and spices are likewise valuable.—R. E.

1 GREY, The Countess.

Cloth manufactured by the Seribas, in Borneo.  
Cloth made by the Mellanoes, in Borneo; sent home by Governor Sir James Brooke.  
Twenty-nine drawings of Borneo plants.

2 HAMMOND, W. P. & Co., Merchants, London.

Specimens of sugar; coffee; sago, pearl; sago, common; sago, flour; pepper, black; pepper, white; nutmegs; mace; cloves; gambier; cutch; gum gamboge; gum benjamin; gum lac; rice; tortoise-shell; turtle-shell; M. O. P. shells; elephants' teeth; elephants' grinder; gutta percha; gum caoutchouc, or India-rubber; gum damma, and isinglass. The latter manufactured in the Archipelago from the interior membranes of fish, and valued on account of its highly glutinous character.

A series of thirty-six paintings, by a Malay artist.  
A model, made to scale, of a sailing-boat used by the natives in the China Seas and Eastern Archipelago for the purposes of smuggling and piracy.

Specimens of rattans, bamboos, &c., grown in and imported from the Eastern Archipelago.

3 WOOLLEY, W., Secretary to the Eastern Archipelago Company, 34 Cornhill.

Bark cloth, manufactured by the Dyaks of Borneo.  
Specimens of hard wood from Borneo; and surface coal from Labuan.

NEW SOUTH WALES.

SOUTH AREA, S. 30.

ABOUT twenty exhibitors from this colony have sent articles for exhibition. The character of these productions accords with the peculiar and commercial importance of the colony itself, consisting as they do principally of raw materials and produce, wool being the most prominent article. Australia may be rightly considered the most extensive wool-producing country in the world. In 1833, the imports from that country into Britain amounted to about three and a-half million pounds; in six years they had risen to ten million pounds, and in thirteen years to upwards of twenty-four million pounds. The climate combines the qualities essential to a wool-growing district, being dry, with a warm summer and a cold winter. On the Camden estate the late Mr. Macarthur succeeded in rearing those Merino flocks, the germ of which he had, in 1806, introduced into Australia by means of sheep imported in a vessel named by him the "Argo." They have proved one of the chief sources of the prosperity of the Australian wool trade, now grown into national importance, and in the past year amounting to thirty-six million pounds, valued at two millions sterling. On the same estate, of which four coloured views are exhibited, an interesting experiment is now being made of introducing the cultivation of the vine. The vineyards are situated on the Nepean River, forty miles south-west of Sydney. The following account of these experiments, which, if having, as there appears every probability of, a successful issue, cannot fail to become of great commercial importance:—

"After many experiments, local experience was at length obtained. The best varieties of vines having been selected, were transferred to a proper site in 1830, after the soil had been deeply trenched for their reception. This vineyard comprises about twenty-two acres, and is situated on a natural terrace, originally of alluvial deposit, a formation which is of frequent occurrence on the banks of several of the larger streams in New

South Wales. The soil is a porous, brown, fine-grained siliceous loam, of great depth, containing much decomposed vegetable matter, proxide of iron, and probably a considerable quantity of potash. In sinking a well an opportunity was offered of ascertaining the condition of the soil to the depth of fifty feet. Little change was observable for the first twenty feet; but the presence of vegetable matter became gradually less apparent, and the iron more abundant: the soil, however, continued to be quite as porous as at the surface. In descending further the change was more rapid, becoming more ferruginous, with a considerable admixture of alumina, until, at the depth of forty feet, it appeared to be little but sand, clay, and iron, of a bright red colour, and in such combination as to be perfectly permeable to water, and consequently to the roots of the vines. At the depth of forty to fifty feet water is obtained freely by infiltration, apparently from the bed of the river Nepean, which flows at about that level, in a deep channel several hundred yards distance. During periods of heavy rain this stream swells so much as to overflow its banks in certain places, and then forms rapid currents between the chain of alluvial terraces, such as the one described, and the higher grounds behind, rising to within a few feet of the surface of the former, and forming them into a series of temporary islands, some of them of great extent.

"The soil of these terraces possesses in great perfection many of the requisites for vine cultivation in a hot climate, which is also extremely uncertain with respect to moisture. During the most rainy periods it is never too wet; nor after being duly trenched does it, during the longest droughts, even close to the surface, ever become thoroughly deprived of moisture.

"The great depth and porous character of the soil renders it permeable to the surface water, however abundant, and capable of transmitting it back again by capillary attraction to the surface as it becomes parched by the great heats of summer. In less than twenty years, roots of the vines were found to have penetrated fifteen to twenty feet—how much deeper is not known. The growth of the plants is luxuriant, more equal, one year taken with another, than on the hill soils—their crops abundant and certain, were it not for the liability of damage from hailstones, from frosts late in the spring, and rotteness in the fruit when a series of showery weather happens towards the end of summer; the last two accidents being of more frequent occurrence in low than elevated situations.

"About ten years subsequently to the formation of the last-mentioned vineyard, another was commenced in a totally different site and soil; it occupies part of the slope of a hill of moderate elevation, the surface of which has been formed into terraces, to prevent damage from washing during heavy rains. The soil is a calcareous loam, resting at about two to four feet upon shale, passing into soft calcareous clayey sandstone, the soil itself being full of fragments of decomposing rock and of indurated marl or calcareous earth. Although very expensive to form into vineyards in a suitable manner, this description of land promises to be productive and to yield wine of very good quality. A similar description of land exists in considerable quantities throughout the older portion of the colony."

No wines being permitted for exhibition, the specimens sent over are not found in this collection. Australia possesses every requisite in regard of her natural capabilities for producing wine and dried fruits, not inferior to Spain itself. But experience is as yet wanting. The increasing importance of the tallow and leather trades is indicated by articles of that class exhibited. An interesting apparatus for determining the power of propellers is exhibited among these objects.

—R. E.

- 1 ARMITAGE BROTHERS, *Huddersfield*—Importers and Manufacturers.  
A bale of scoured Sydney skin-wool, grown in New South Wales, and washed by Armitage and Company of Sydney.
- 1A BIDWELL, J. G., Government Commissioner of Lands, *Zinana, Wide Bay, Australia*.  
A log of wood from the interior of Wide Bay district, north-east coast of Australia, the *Briggalo* of the squatters (Bricklow of Leichardt's Journey), a species of *Acacia*, probably undescribed.
- 2 DAY, T. & W., *Sydney*—Manufacturers.  
Specimens of colonial timber. Pair of ash oars and pair of paddles, manufactured of colonial wood.
- 2A BRIEARS, JAMES, *Sydney*.  
Two beef hams spiced and cured by the exhibitor.  
[The articles sent by the two preceding exhibitors were forwarded through Mr. A. Bogue.]
- 3 BURCHETT, J. R., 15 *Edmonton Crescent, Edmonton*.  
A desk and a chess-board of polished woods.
- 4 CALLAGHAN, —, Crown Prosecutor, Attorney-General.  
Two volumes of statutes, printed from types made in Sydney, and the books bound in Sydney.
- 5 CLINCH, J., 31 *Abchurch Lane*—Importer.  
A set of bagpipes, made by George Sherrer, Sydney.
- 6 DUNBAR, D., *Limehouse*.  
Samples of wheat flour from Port Phillip, New South Wales. Agent, N. Tweeddale.
- 7 DANGAR, R. C., *Billiter Street*.  
Preserved fresh beef and mutton, a substitute for salt meats, from Newcastle, near Sydney.
- 8 LEARMOUTH, THOMAS, 40 *Royal Crescent, Notting Hill*—Importer.  
Merino wool from Port Phillip.
- 9 MOTLEY, THOMAS, *Leeds*—Proprietor.  
Wool, from Sydney, New South Wales.
- 10 DEVITT & MOORE, 9 *Billiter Street*.  
A coach wrench, made at Sydney.
- 11 DUDGEON & Co., 1 *New Bank Buildings*.  
Ores and specimens of wood from Sydney. Cured hams. Various samples of cotton grown near Maitland.
- 12 LEARMOUTH, THOMAS, 40 *Royal Crescent, Notting Hill*.  
Four samples of Australian sheep's wool from New South Wales.
- 13 MACARTHUR, Lieut.-Colonel E.  
Case containing 132 specimens of Merino wool, derived from the late Mr. Macarthur's original flock. In 1807 the first importation into England of this wool was 245 lbs. In the year 1848, it was 23,000,000 lbs. from New South Wales alone (valued at more than 1,200,000*l.*); and from the whole of the Australian colonies 36,000,000 lbs.  
Four views in New South Wales, one being Camden (46 miles S. W. of Sydney), the original seat of Australian sheep husbandry, and now becoming celebrated for its vineyards.  
[Specimens of the wines produced at these vineyards have been sent over to England; one of these is a hog-head from the first vineyard, made from a grape imported



from France called "La Folle," mixed to the extent of about one-third with another sort from Madeira, called the "Verdeilho," the former being very productive and the latter remarkable for its richness in the saccharine principle. In the process of manufacture the grapes were crushed by being passed through a machine of simple construction, which reduces them thoroughly without bruising the stalks, and which, with the application afterwards of moderate pressure to the "rape," separates the juice from it with ease and expedition.

The wine was fermented in large vats of hewn stone containing from 800 to 1,600 gallons, in which it remained until the tumultuous fermentation had subsided. It was then drawn off into large store casks, containing 400 gallons, and suffered to continue the gentle stage of fermentation until quite still. The casks were regularly filled up, at short intervals, as the fermenting liquid subsided. When the process was sufficiently complete it was clarified with isinglass.

Another is a quarter cask, from the "White Muscat of Lunelle." The grapes were suffered to acquire a very advanced stage of maturity, to the extent of shrivelling on the bunches. To this wine, during the tumultuous fermentation, was added at different times very pure brandy of home manufacture, previously filtered through charcoal to render it quite flavourless, in the proportion of two pints of pure alcohol to the hundred pints of wine.

These wines have a certain dryness and bitterness peculiar to the wines of New South Wales, to which the palate becomes accustomed: but with age this bitterness passes off. The specimens sent are said to be void of this taste.

The wines at Camden are rarely fit for use until three years old, and greatly improved by keeping. They are very wholesome, and are extensively used by persons who have acquired a taste for them.]

15 MOSES, SON, & DAVIS, 14 & 15 Aldgate High Street.

Cask of Australian mutton tallow, and another of beef tallow, from the boiling establishment of Messrs. Benjamin and Moses, Sydney.

16 WATSON, YOUNG, & Co., 2 Abchurch Lane, City.

Orchilla maroon roans; red roans. Enamelled hides, enamelled kangaroo skins, patent kangaroo skins, prepared by Thomas Hall and Co.

17 BLAND, Dr., Sydney.

Model of the exhibitor's invention for extinguishing fire arising from spontaneous combustion in ships laden with wool.

18 SHEILDS, FRANCIS W., Civil Engineer.

1. Model of lattice bridge for colonial railways or works, formed chiefly of unsawn timber, and of original detailed construction.

2. Model of plate rail for colonial railways, with original arrangement of details; formed of five-eighths inch iron plate, laid on iron bark hardwood.

3. Model of trestle frame for colonial railways, used instead of embankments where timber is plentiful.

N.B.—The above were designed by the exhibitor for the Sydney Railway Company.

4. Specimens of hardwood, in common use in New South Wales, and suitable for the above purposes.

19 THE AUSTRALIAN AGRICULTURAL COMPANY,  
12 King's Arms Yard, Moorgate Street.

Specimens of coals from the Company's mines at Newcastle, New South Wales.

20 LEON, LOUIS, 65 Hatton Garden.

A block of spermaceti, manufactured in New South Wales from the sperm whale of the South Seas.

21 MITCHELL, Lieut.-Col. Sir T. L., Surveyor-General of New South Wales.

1. A close cylinder of water for testing the power and action of propellers, is mounted on wheels, which move in grooves cut in a board, to which are attached bearings which support the piston-rod, passing through a stuffing box; and on which piston the model propeller is attached by a socket, and fixed by a nut inside.

The model propeller is placed within the cylinder by unscrewing the cap from the collar, to which is fitted a leathern washer; so that when screwed close, the whole is water-tight. The cylinder is to be fitted with a funnel, at the receiver, after the whole apparatus has been adjusted.

The turning gear is to be applied by inserting the shaft at the connecting socket. Multiplying wheels drive this propeller, which, acting on the water, causes the whole cylinder to move backward or forward, with more or less speed, thereby proving the power of the propeller on the water.

2. The Bomaring propeller used with the small steam engine in Port Jackson. Others of larger construction have been sent to England for trial, and may be heard of at Messrs. D. Cooper and Co., 3 Copthall Chambers, City.

3. Rope made from the *Doryanthes excelsa*, with specimens of the leaf and of the fibre.

This root (a bulb) grows in great abundance, covering some wild lands near Sydney. The leaves sent are from the Botanic Gardens; those from which the ropes were made were 6 feet long. The rope absorbs tar, which it is said the New Zealand flax will not.

4. Cone of the *Bidwellii araucaria*, "Bunya bunya," the native name. The fruit inside is eaten by the natives near Moreton Bay, in which direction the tree is found, growing in circumference 70 or 80 feet, and to a proportionate height.

5. New map of New South Wales (not yet published). Original three-sheet map of the colony, engraved and printed at Sydney. The engraver is deaf and dumb, and was taught map-engraving in the colony by the compiler of these maps.

6. School-book, written, printed, and published at Sydney.

7. Specimens of native copper and of galena, both from Canobolas Mountains, New South Wales.

22 RAYNER, A. & G., Sydney.

Two specimens of doeskin cloth, 20 yards of each.

23 WEBSTER, Captain, Governor of Darlinghurst Gaol.

Hats made from the leaf of the cabbage-tree, manufactured by the prisoners in Darlinghurst gaol, exemplifying the industry and discipline of the prisoners in the Australian gaols.

24 GIBBS, Colonel, Sydney.

Neats'-foot oil.

MORRISON, Mrs., Sydney.

Stockings and mits knitted from a thread made of the opossum fur, by the exhibitor.

[The articles sent by the four preceding exhibitors were forwarded through Mr. A. Bogue.]

## SOUTH AUSTRALIA.

SOUTH AREA, R. 21.

AUSTRALIA, regard being had to the vast size of the country, and the value which attaches to its products, is only inadequately represented in the Exhibition. The specimens presented are, however, of a very interesting and valuable description. The copper ores, which have been so productive of commercial prosperity to the individuals concerned in their extraction, are shown by an interesting selection from the Lyndoch Valley mines, near Adelaide, and the Burra Burra mines. The extraordinary results of the latter undertaking are among the occasional marvels of mining speculation. Specimens of the carbonate and oxide of copper and of native copper are exhibited. In addition, attention requires to be drawn to a recent attempt to introduce the cultivation of the silkworm into this colony, and specimens are exhibited. Some agricultural and geological specimens likewise deserve notice.—R. E.

1 SOUTH AUSTRALIAN COMPANY, 4 *New Broad Street*.

Specimens of copper ores from Kanmantoo mines:—  
Black and yellow sulphurets. Green and blue carbonate. Red and grey oxide. Native copper. Peacock, Pyrites, &c.

2 THE BAROSSA RANGE MINING COMPANY, by Messrs. COODE, BROWNE, & CO., 10 *King's Arms Yard, Moorgate Street*.

Stones of copper ore, as raised from the lodes.  
Sulphuret of copper, containing 40 per cent. of pure copper, raised in the Lyndoch Valley, about thirty miles from Adelaide, South Australia.

3 GRAHAM & HALLETT, *South Australia*—Proprietors. The following articles are from the mines at Burra Burra:—

- 1 Red oxide of copper.
- 2 Green carbonate of copper.
- 3 Green carbonate of copper.
- 4 Red oxide and carbonate combined.
- 5 Red oxide and blue carbonate.
- 6 Strata in which the minerals occur.
- 7 Native copper.
- 8 Malachite and red oxide of copper.
- 9 Fibrous malachite.
- 10 Cabinet specimens, arranged.
- 11 Views of Burra Burra mine and smelting-house, and the township.

[The Burra Burra mines present one of the most striking examples of successful mining speculation with which we are acquainted. From indications which were regarded as of a most favourable character, the mine was started on the 5th of September, 1845, with a capital of 12,320*l.*, subscribed by a few merchants and traders at Adelaide. The following returns of ore raised from the commencement of the undertaking to September, 1850, will exhibit the extraordinary success of this undertaking:—

|                              | Tons.  | Cwts. |
|------------------------------|--------|-------|
| September 30, 1846 . . . . . | 6,359  | 10    |
| " 1847 . . . . .             | 10,794 | 17    |
| " 1848 . . . . .             | 12,791 | 11    |
| " 1849 . . . . .             | 7,789  | 16    |
| " 1850 . . . . .             | 18,692 | 9     |

Making a total in 5 years of . 56,428 3

of copper ore, varying in quality from ore containing 30 per cent. of copper to much that produces 70 per cent. of that metal. The money value of this is 738,108*l.*

This great mineral deposit exhibits some peculiarities.

Although the miners and the proprietors speak of working on lodes, these are of a very different character from the copper lodes of the primary rocks of this country. In a great basin, formed in an amphitheatre of hills, an immense deposit of clay—the result of the decomposition of the clay-slate—has taken place; this, under conditions which we are not enabled to determine, became also the reservoir for the reception of copper. In all probability it was first deposited in the pure metallic state—a fine example of the electrotype process of Nature. During this process, the so-called veins spread themselves through the soft clay in various directions, in precisely the same manner as we may, by carrying the terminal wires of a voltaic battery into a mass of clay saturated with sulphate of copper, form a curious arborescent mass. By the action of the oxygen contained in the water, this copper becomes oxidized by the slow process which gives rise to the very beautiful crystals of red oxide of copper, and from this state it passes into the blue and green carbonates, under the action of carbonic acid, the difference in the colour of the two arising from the quantity of water in combination.

The malachites, which are now very extensively employed for ornamental purposes, are carbonates of copper, and large quantities of the specimens selected from the Burra Burra mines are sold for this purpose.

Nearly all the copper ore raised at the South Australian mines, has been hitherto sent to England, and smelted at Swansea; but there has been recently a smelting establishment introduced, which promises to be of great advantage to the colony.

The number of people now employed at the Burra Burra mines is 1,003.—R. H.]

4 MOSES, H. E. & M., 87 *Tower Hill*.

Fine sample of Australian wheat, weighing 64 lbs. per bushel; the produce of Adelaide, South Australia. Preserved fresh meats, prepared at the Camperdown establishments, Sydney, New South Wales. They are upwards of three years old, have undergone a voyage of 16,000 miles, and are in a perfectly fresh state, and will keep so for any number of years.

5 HALLETT, R. & SONS, *Broad Street, Ratcliff, London*—Importer.

Articles from South Australia:—

- 1, 2 Wheat.
- 3 Hard soap.
- 4 Olive oil.
- 5 Five cases, containing specimens of opal and other rocks allied to precious stones.
- 6 Two samples of flour, and one of barley.
- 7 A dried bouquet of small native plants.
- 8 Specimens of stream gold, and gold in its matrix.
- 9 A case of polished stones, the produce of the colony.

## 6 MURRAY, Mrs.

Specimen of silk raised by the exhibitor, at Adelaide, in 1850, the produce of 580 worms fed on white and black mulberry leaves.

## 7 GREY, Earl (forwarded by).

Specimens of silk produced in South Australia, and showing the capabilities of that country for the production of this article.

9 HEATH & BURROW, 6 *New London Street, Mark Lane*, and *Old Corn Exchange*—Importers. Specimens of South Australian grain.10 JOSEPH, J. A., 7 *Blomfield Crescent, Bayswater*.

A block of copper ore, weighing about 800 pounds, and containing about 45 per cent. of copper, raised from

Baker's lode, at Tangkillo Reedy Creek, South Australia, on the special survey of the Australian Mining Company.

Varieties of copper ores raised from the Company's various lodes of ores; minerals, and geological specimens from South Australia, to illustrate the surveyed portion of that colony.

Miscellaneous specimens of minerals.

[The South Australian mines have a peculiar interest from their geological and mineralogical character. The ores of copper are usually of the richest varieties, the peroxide carbonates, green and blue. The South Australian Mining Company possess a territory of 22,000 acres; their principal mining operations are the Tangkillo, where seven lodes are now being explored. Baker's lode has already produced nearly 4,000 tons of copper ore, giving from 12 to 30 per cent. of pure copper. Formerly all the ore was sent to this country to be smelted; but smelting operations are now carried on in South Australia, and the result is very satisfactory to the colony.—R. H.]

## VAN DIEMEN'S LAND.

SOUTH AREA, S. 31.

The general character of the productions of the Tasmanian colony resembles that of the others, and is principally remarkable for the number and interesting nature of the products contained in the first four Classes of the Exhibition. The exceptions are, however, more numerous than in some other instances. Some interesting and attractive articles of furniture, formed out of richly-marked woods, are presented to notice, and may prove instrumental in directing the attention of decorative furniture makers to the capabilities of the materials for the construction of furniture in England. A few specimens of textile manufactures are also shown, such as a roll of tweed, made of colonial materials. A considerable number of specimens of fur, and of the preparation of leather, harness, &c., indicate that progress in this important manufacture has been made by the colonists. The possession of an abundant supply of tanning materials of the purest kind, added to the abundance and cheapness of live stock, cannot fail to render this an increasingly important direction for industrial activity.

What will, however, receive most attention, and what is also most abundantly exhibited by this colony, is a collection of specimens of woods applicable for every purpose of art or use. The musk-wood of this colony, as an instance, is mentioned as valuable for ornamental purposes, of a close and fine grain, and variously veined and dotted. The wood of the myrtle is represented as of a beautiful vein and watered, fitting it admirably for showy picture-frames. The blue gum-tree promises to become a most valuable substitute for oak in ship-building. It reaches a vast height in the forests of this colony; two sections are exhibited which were taken at a distance of 134 feet apart, and a very trifling difference in their diameter appears. The Huron pine is likewise a valuable timber, and specimens of it are exhibited as applied to domestic and ornamental purposes. In addition to these it is suggested as affording an excellent material for organ-pipes, which might be bored out of the solid timber, and some pipes are exhibited. The advantages claimed for them are, that they yield a softer and more mellow tone than pipes made of a looser grain. This wood is also extremely durable, and little influenced by atmospheric vicissitudes.

Vegetable products of various kinds are also exhibited. The agriculture of the colony is represented

by various specimens of wheat, barley, flour, &c. The gum resins of those wonderful liliaceous trees of Tasmania, the grass-trees, is exhibited, and suggested as a material for the dyer and varnish-maker. Interest will also be much excited by the specimens of what is called the native bread of Tasmania. This is in reality a large underground truffle, known botanically as *Mylitta Australis*. One of the specimens weighed originally upwards of fourteen pounds. It is eagerly sought by the natives, and not less so by the marsupial animals, who devour it with great greediness. It is half-roasted before being used for human food.

The furs of those animals which communicate so peculiar a feature to the zoology of Australia generally, the *Marsupialæ*, have been supplied in a manufactured and unmanufactured state. The feathers and oil of the sooty petrel, with articles of industrial value, are exhibited. Honey and wax are likewise sent; and it is indicated that the feeding of the industrious insects producing them can nowhere be more successfully conducted than in this colony. To the naturalist a specimen of silicized wood, found about thirty-two miles from Hobart Town embedded in lava, will appear of much interest.—R. E.

DENISON, His Excellency Sir W. T.

1 Blue gum timber of Van Diemen's Land (*Eucalyptus globulus*). Squared log 20 ft. long, 12 ins. by 12 ins. Said to be equal to oak as a ship-building timber. The two sections exhibited were taken from one tree at a distance of 134 ft. apart.

2 Stringy bark of Van Diemen's Land (*Eucalyptus robusta*). Squared log 20 ft. long, 12 ins. by 12 ins.

[This tree forms for the most part a large tree; the timber is, however, coarser than the last, and is chiefly used for house building and fencing.]

3 Blackwood, or lightwood, of Tasmania (*Acacia melanoxylon*). Squared log, 20 ft. long, 12 ins. by 12 ins. A very hard close-grained dark and full-veined cabinet wood, used for furniture and fittings.

4 Sassafras of Tasmania, often sassafrax (*Atherosperma moschatum*). Squared log, 13 ft. long, 12 ins. by 12 ins.

[This tree yields a soft, even, and close-grained timber, adapted for turning, and, probably, for the carver. It is largely used for flooring-boards, the inside work of houses, and cabin fittings in ships.]

5 Myrtle of Tasmania (*Fagus Cunninghamii*). Squared log, 12 ft. long, 12 ins. by 12 ins. It is hard and close grained, with a lively red tint, streaked and mottled near the root; and takes a fine polish.

These timbers are abundant in the colony, and can mostly be obtained of any required size.

ADCOCK, Mrs. W., *Elizabeth Street, Hobart Town.*

6 Two canisters of preserved meat.

HAMILTON, —, *Elizabeth Street, Hobart Town—*  
Manufacturer.

7 Hall-chair of blackwood (*Acacia melanoxylon*). with a raised shield cut on the back, kangaroo and emu for supporters, surmounted by a rose, with thistle on one side and shamrock on the other, carved in relief and polished.

8 Small round table, of Huron pine (*Dacrydium Franklinii*) with chess-board in the centre, and the pedestal of the same. The chequers are alternately of plain Huron pine, and wood of the she-oak of Tasmania (*Casuarina quadrivalvis*), with a border of blackwood, surrounded by a narrow string of myrtle, the whole being enclosed with a band of figured pine.

PIERSON, —, Cabinet-maker.

9 Pier table or chiffonnière, of polished blackwood. Exhibited to show the dark tints and veining of this wood, and the polish of which it is susceptible.

FRASER, A., Coachmaker, *Collins Street, Hobart Town*—Manufacturer.

10 A pair of carriage wheels. The naves of the wheels are of blackwood, the spokes and felloes of blue gum; for these purposes, the two kinds of timber have been found well adapted.

REEVES, J. G., *Elizabeth and Macquarie Streets, Hobart Town.*

11 Case of leather, viz. :—  
Hides of black and brown harness leather. Kip. Kip waxed on the grain, and black-grained kip.

Kangaroo-skins, grained, brown, and waxed.

Calf-skins, waxed and brown.

Black bazils.

Pair racks, cordovan horse hide.

Sole leather.

[These skins and hides are of Tasmanian production, and have been tanned and dressed at the establishment of the exhibitor.]

CHAMPION, —, *Hobart Town.*

12 Table of muskwood, *Eurybia argophylla* of Tasmania. Round turnover table, with brasswork and springs of Tasmanian manufacture. Exhibited for the beauty of the wood.

DOUGLAS RIVER COAL COMPANY.

13 Coal, two bushels.

[This coal is exhibited as a sample of the strong bituminous coal occurring on the east coast of Van Diemen's Land, and traceable over a large area of country, in seams varying in thickness from a few inches to ten feet and upwards.]

BROWN, JOHN, Cabinetmaker, *Launceston.*

14 Sideboard of blackwood of Tasmania.

[The timber of the *Acacia melanoxylon* is considered to be more deeply veined and tinted on the northern than on the southern side of the colony. It is called blackwood in Launceston and lightwood in Hobart Town.]

15 Top of star loo table. Composed of alternate-pointed sections of figured Huron pine and blackwood, veneered on cedar, and meeting in the centre; with finished pedestal.

16 Lady's table of muskwood.

STRAHAN, R., *Bonnington.*

17 Box of salt: two sorts—coarse, for pickling; and table, or basket salt. A sample from which the magnesian salts are said to be thoroughly separated.

MURRAY, W., *Liverpool Street, Hobart Town.*

18 Box of starch: the box made of Huron pine, figured. There are now several starch manufactories in Hobart Town.

DIXON, JAMES, *Skelton Castle, Isis.*

19 Flax, dressed in 1850 by the exhibitor, who is endeavouring to establish the cultivation of flax in Tasmania.

20 Box of dried apples.

[Generally, more fruits are dried in the northern than the southern side of Van Diemen's Land; but the last two summers have been unfavourable, from the unusually low temperature.]

BUTTON, THOMAS, *Launceston.*

21 Samples of glue.

22 Concentrated solution of Mimosa bark, extracted by cold water.

[This solution is employed for tanning leather; it is considered in a great measure free from colouring matter, and from the principles which give a dark, uneven character to leather, rendering it brittle, and depreciating its value in the English market.]

23 Mimosa bark, ground. Bark of *Acacia molissima*, or black wattle, said to be the best for tanning.

DENISON, His Excellency Sir WILLIAM THOMAS, *Norfolk Island.*

24 Box of tobacco in leaf.

25 Box of arrow-root.

26 Box of maize.

27 Cayenne pepper.

28—35. Wheats: — Farmer's friend, white velvet, James's Essex, Golden drop, white Kent, mother of plenty, velvet, and white Lammas.

MARSHALL, G., *Noble Farm, Pittwater.*

36 Wheat, bag marked G.

37 Oats, bag marked G.

DENISON, His Excellency Sir W. T.

38 Wheat (Chidham).

MILLIGAN, JOSEPH, *Oyster Cove.*

39 Sassafras bark of Tasmania (*Atherosperma moschatum*). Used medicinally as a bitter and a stomachic.

MURRAY, W., *Liverpool Street, Hobart Town.*

40 Mould candles.

M'NAUGHTEN, A.

41 Cask of velvet wheat.

LIPSCOMBE, F.

42 Cask of white Lammas wheat.

M'NAUGHTEN, A.

43 Cask of white wheat.

WALKER, JOHN, *Barrack Street, Hobart Town.*

44 Cask of white wheat. Cask made of silver wattle, with hoops of young wattle.

BROWN & Co., *New Wharf.*

45 White wheat, in a cask of Huron pine, hooped with black wattle (*Acacia mollissima*).

46 White wheat, in a cask made of black wood, with hoops of black wattle.

TOOTH, E., *Bagdad.*

47 Cask of malt.

PATTERSON, —, *Liverpool Street, Hobart Town.*

48 Cask of small malt. Cask made of silver wattle, wattle hoops.

WALKER, J., *Barrack Street, Hobart Town.*

49 Pearl barley. Cask made of silver wattle, with wattle hoops.

CLAYTON, H., *Norfolk Plains.*

50 Flour. Cask made of silver wattle, with wattle hoops.

WALKER, J., *Barrack Street, Hobart Town.*

51 Fine flour. Cask made of silver wattle, with hoops of young black wattle.

M'NAUGHTEN, —.

52 Superfine flour of Van Diemen's Land.

MILLIGAN, A. M., *Launceston.*

53 Small cask of biscuit, manufactured of Tasmanian flour.

BROCK, —, *Macquarie Street, Hobart Town.*

54 Common seamen's biscuits.

55 Ship biscuits, fine.

DENISON, His Excellency Sir W. T.

56—65 Muskwood (*Eurybia argophylla*), smoothed and polished on one side to show the grain.

[The muskwood of Tasmania is valuable for the purposes of the cabinet-maker, being variously veined, dotted, and marked upon a brown-ground colour. It is close and fine in the grain, takes a high polish, and harmonises well with the gilding on picture-frames, into which it is often worked up. The musk-tree grows only in dense forests and damp situations; and though it does not attain the size of a forest tree in Van Diemen's Land, it yet yields slabs large enough for ordinary ornamental work. The finest fancy wood is of course obtained from parts near the root, and from knotty gnarled butts of trees.]

66 Slab of myrtle (*Fagus Cunninghamii*), of Van Diemen's Land.

[This myrtle often composes dense forests of many miles, and individual trees in such situations, attain a girth of from 30 to 40 feet, with a proportionate height. The wood is of a fresh pink colour when newly cut, and is often very beautifully veined and watered, which fits it for showy picture-frames, and similar cabinet-work.]

67—70 Cedar (*Athrotaxis selaginoides*), or pencil pine, of Tasmania, Marlborough, and Lake Country.

[The pencil pine found in the ravines and gorges of the mountain, and the high table-land of the colony, in groups, or singly; sometimes in the forests, and not unfrequently in bare, unsightly groves; of dead, dry, and bleached stems, with a few large limbs attached, at the height of from 3,000 to 4,000 feet above the level of the sea.]

71, 72 Sections, with bark.

73 Celery-topped pine (*Phyllocladus asplenifolia*) of Tasmania.

[This pine attains a height of 150 feet, and grows in all the cold and moist parts of Van Diemen's Land, in a handsome pyramidal form. The young trees are sometimes used as spars for rigging vessels, but they are too heavy; the timber is very white and close-grained, and useful for household purposes.]

74, 75, and 76. Section, with bark, 20 inches long, 12 inches in diameter. The same,  $\frac{1}{4}$  foot, and 12 inches in diameter. Rosewood, or zebra wood, of Tasmania, said to be plentiful about Marlborough and Lake Country.

77 Muskwood log, from Tasman's Peninsula.

SMITH, C. T.

78 Hops, Tasmanian.

MILLIGAN, J., *Mount Wellington, and Constitution Hill.*

79 Hones for edged tools.

DENISON, His Excellency Sir W. T.

80 A drip-stone, from Norfolk Island. Filters made of this rock, which appears to be a raised beach of calcareous grit, are in general use in the colony, and much approved.

MILLIGAN, J., *Flinders' Island, in Bass's Straits.*

81 Gum: gum resin of the grass tree (*Xanthorrhœa australis*).

[This gum resin, or balsam, is highly inflammable, yielding, on combustion, a clear white flame and rich fragrant odour, and is said to be used in churches in place of frankincense; it dyes calico a nankin colour; enters into the composition of some sealing-wax, and may become the basis of a varnish. Very abundant on many of the meagre soils of clay and sand in Flinders' Island and the neighbouring islands and continent.]

FOWLER, —, *Maria Island.*

82—85 Dogwood slabs (*Bedfordia*).

86, 87 Muskwood slabs (*Eurybia argophylla*).

88 He-oak.

89 Ironwood, or *Lignum vitae* of Tasmania. (*Notelaea ligustrina*.)

ROBINSON, —, *Westbury.*

90 A gun-stock of blackwood. Roughly cut into form, and polished on one side to show the grain of the wood.

WHITESIDES, —, *Hobart Town.*

91 Blackwood of Tasmania. A thin piece, polished on one side.

92 Myrtlewood.

93 Muskwood.

QUINN, —, *Argyll Street, Hobart Town.*

94 Blue gum of Van Diemen's Land (*Eucalyptus globulus*). A piece taken near the root, squared and polished on two sides, to show the grain.

QUINN, —, *Norfolk Island.*

95 Maple. Small piece of veneer, polished.

M'NAUGHTEN, —, *Hobart Town.*

96—102 Muskwood of Van Diemen's Land (*Eurybia argophylla*).

HADDEN, Capt. R. E.

103, 104 Muskwood of Van Diemen's Land.

EUSTON & MILLIGAN, *Macquarie Harbour.*

105, 106 Ironwood, or *Lignum vitae* of Tasmania. Cross section of the trunk of the tree.

[This tree rarely attains a diameter of more than 12 or 14 inches. The density and hardness of this wood is such as to have led to its application in making sheaves for ships' blocks.]

BROWNRIFF, —.

107, 108 Muskwood slabs.

BURGESS, Mrs., *Davey Street, Hobart Town.*

109 Worsted work, representing a branch from a blue gum tree in flower, with four birds of Tasmania perched on the twigs. The branch, leaves, and flowers of the blue gum (*Eucalyptus globulus*) are represented. The birds are a red-breast, a small honey-sucker, a pardalote, and the blue-headed wren. The frames of this and the next are of the timber of the myrtle-tree of Van Diemen's Land, made by Mr. Pearson, of Hobart Town.

110 Worsted work, representing a group of indigenous flowers of Tasmania. In the centre is the warratah (*Telopea truncata*); immediately over it is a head of the grass-tree of Mount Wellington in flower (*Richea distichophylla*); then in order come *Acacia verticillata*, *Billardiera longiflora*, *Acacia armata* (an exotic) *Richea sp.*, *Acacia mollissima*, *Acacia verniciflua*, *Casuarina quadrivalvis*, *Pomaderris*, *Boronia variabilis*, *Tetratheca sp.*, *Pultenea, sp.*, and *Solanum laciniatum*.

HOOD, R. V., *Liverpool Street, Hobart Town.*

111 Timber of silver wattle (*Acacia dealbata*), with one side polished.

112, 113 Muskwood slabs.

114, 115 Blackwood slabs, squared (*Acacia melanoxylon*).

116 Cross section of small tree of Huron pine, with one corner smoothed and polished.

117 Huron pine slab (*Dacrydium Franklinii*), squared, and polished on two sides.

118 Muskwood slab, (*Eurybia argophylla*), squared and polished, to show the grain and character of the wood for ornamental purposes.

119 Myrtle slab (*Fagus Cunninghamii*), from the root.

120 Myrtle slab, from the stem of the tree.

DENISON, His Excellency Sir W. T.

121 Rosewood, *Acacia sp.*, of Van Diemen's Land. Found in the Lake Country near Marlborough.

122, 123 Rosewood of Van Diemen's Land.

124 Celery pine slab (*Phyllocladus asplenifolia*), squared.

125 Rosewood.

HOOD, R. V.

126 Huron pine picture frame, with gilt moulding; the gold leaf made by Mr. Hood.

127 Muskwood picture frame.

MARRIOTT, The Venerable Archdeacon.

128 Muskwood picture frame.

HOOD, R. V. *Hobart Town.*

129 Myrtlewood picture frame.

WISEMAN, —, *Hobart Town.*

130 Whip, for tandem or four horses. Thong of colonial leather, and the stick a young sassafras of Tasmania.

131 Two ladies' riding whips, of whalebone, tipped with silver, by Mr. Jones.

132 Whip for stock-hunting. Thong of colonial leather, and stick of she-oak.

133 Stock-hunter's saddle, complete. Manufactured of colonial cow-hide, prepared in Hobart Town.

134 Stock-hunter's breastplate.

BUTTON, THOS., *Launceston*.

135 Dressed kangaroo skins.

DENISON, His Excellency Sir W. T.

136 Roll of Tweed. Colonial material, manufactured by the inmates of Cascades' establishment.

137 Hank of yarn.

SUPERINTENDENT OF QUEEN'S ORPHAN SCHOOLS.

138 Woollen gloves, knitted. Manufactured by the children in the Queen's Orphan Schools.

139 Woollen socks, knitted.

140 The same, unbleached.

141 Woollen stockings, knitted.

142 Shawls, knitted.

BARNARD, J.

143 Swansdown, two skins.

CLEBURNE, R., *Murray Street, Hobart Town*.

144 Samples of soap.

LUMSDEN, —, *Brisbane Street, Hobart Town*.

145 Loo-table top, of Huron pine.

146 Pedestal for the table.

WATCHORN, W., *Liverpool Street, Hobart Town*.

147 Cask of tallow. The exhibitor claims to have been the first to export tallow to England from the colony.

DENISON, His Excellency Sir W. T.

149 Loo-table top, dogwood (*Bedfordia sp.*).

[The dog-wood, or *Bedfordia* tree, is one of the most beautiful fancy woods of Van Diemen's Land. It attains to a larger size on Maria Island than elsewhere. In the vicinity of Hobart Town it is a mere shrub.]

150 Pedestal for the same.

151 Top of a sofa-table, inlaid with chess-board in the middle.

ROUT, W.

152 Portmanteau. Made of colonial leather.

GUNN, W., *Launceston*.

153 Feathers of mutton-birds, or sooty petrel (*Puffinus breviceaudis*).

[These feathers are much used for pillows, bolsters, and mattresses, and, when properly prepared, answer the purpose well. Owing to the numbers of this bird which resort to the islands in Bass's Straits, and the profusion of feathers with which it is clothed, this article can be obtained in abundance.]

ROUT, W., *Elizabeth Street, Hobart Town*.

154 A small rope line.

155 Small lines, three sizes.

156 Best small rope, three sizes.

157 Cable-laid lines, three sizes.

158 Common lines, two sizes.

MARSHALL, —, *Hobart Town*.

159 Riding-whip, common. Made entirely of colonial materials.

160 Two whip-thongs—one for gig, and one for hunting-whip. Made of horse-hide, dressed in Hobart Town.

OAKDEN, PHILIP, *Launceston*.

161 Wool, two fleeces, Leicester improved.

[The produce of sheep imported from the best flocks in England in 1837, is exhibited to show the improvement in the softness and silky appearance of the fleece, which are attributed to the nature of the climate.]

HART, —, *Hobart Town*.

162 Glue.

163 Oil, from neats' feet.

164 Oil, from sheep's trotters.

HOOD, R. V.

165 Gold leaf. Manufactured from Californian gold, brought to Tasmania by colonial trading vessels.

166 Gold-beaters' skin.

M'KENZIE, Mrs., *Blue Hills, Bothwell*.

167 Knitted gloves, made from opossum fur.

SLIEGLITZ, Mrs., *Killymoon, Break-o'-day*.

168 Gloves, made from opossum fur.

TOOTH, E.

169 Gloves, made from opossum fur.

M'KENZIE, Mrs., *Bothwell*.

170 Lady's cape of opossum fur.

TOOTH, E.

171 Gloves, made from lambs' wool.

BUTTON, THOS., *Launceston*.

172 Parchment.

ROUT, W.

173 Brushes, one set of four.

LIPSCOMBE, F.

174 Flax, dressed.

SHARLAND, W.

175 Carriage-rug. Made of skins of the black opossum, lined with skins of the native cat.

DENISON, His Excellency Sir W. T.

176 Rugs of various furs. Made of skins of the brush-kangaroo (*Halmaturus Bennettii*), forest kangaroo (*Macropus major*), black opossum (*Phalangista fuliginosa*), native cat (*Dasyurus vicerrinus*), tiger-cat (*D. maculatus*), well preserved, exhibited as specimens of great rarity and beauty.

SHARLAND, Mrs., *George Town*.

177 Book of pressed algæ, collected by the exhibitor.

DAVIES, Ven. Archdeacon.

178 Rug of skins of black opossum (*Phalangista fuliginosa*).

179 Rug of tanned skins of brush-kangaroo.

MILLIGAN, J.

180 Carpenter's bench-screw.

181 Three pairs of shoe-lasts.

VALENTINE, Dr., *Campbelltown*.

182 Three organ-pipes of Huron pine, bored in the solid piece, with stops, &c.

[Two of these are bored in solid pine, and are found to yield a softer and more mellow tone than those made of woods not so hard in the grain. It is considered that the tube, being free from joints and glue, and made of very durable wood, when properly seasoned, will be little influenced by atmospheric changes. The small pipe has a stopper, which being removed, an octave above will be produced. The stopped pipe is regarded as a novelty; it gives a very soft note, well adapted for the treble half of the stop-diapason of a chamber-organ. The third is exhibited to show how an open pipe of the usual construction may be tuned by means of a stopper, without injury to its size.]

WARD, C., *Collins Street, Hobart Town*.

183 Stockman's ankle-boots, of colonial material.

REGAN, —, *Liverpool Street, Hobart Town*.

184 Nine dressed kangaroo skins, tanned with wattle bark.

HARPER, —, *Launceston*.

185 Prepared groats.

WARD, C.

186 Blacking for shoes.

ROUT, W.

187 Tanned skin with the hair on of the *Thylacinus cyanocephalus*. The hyæna, or tiger of the colonists, which has become very scarce.

[The Thylacine or "pouched hyæna" of the Tasmanian colonists is the largest and most formidable of the carnivorous species of that peculiar order of quadrupeds (*Marsupialia*), which are almost exclusively confined to Australia and Van Diemen's Land. The Thylacine is peculiar to Van Diemen's Land, and, as its ravages amongst the flocks of the settlers are as destructive as those of the wolf in other countries, it is hunted down with great perseverance, and will probably be the first of existing quadrupeds which will be extirpated.—R. O.]

DENISON, His Excellency Sir W. T.

188 Six tanned skins of the *Ornithorhynchus paradoxus*. The platypus of the colonists. The fine fur under the coat of long hairs upon its back is said to be equal to the fur of beaver for hat-making.

[The *Ornithorhynchus* is peculiar to Australia and Tasmania, and combines with the hair and fur of a mammalian quadruped, the webbed feet and the beak of the duck, whilst the male has spurs on the hind legs like a cock. In its internal anatomy the *Ornithorhynchus* offers many marks of resemblance to both birds and reptiles, and forms the nearest link in the mammalian series to the oviparous classes.—R. O.]

SMITH, M. C. T.

189 Sample of fine wool.

DUNN, —, *Davey Street*.

190 *Mytilus Australis*, a native bread obtained on the Snug Estate, North West Bay, D'Entrecasteaux Channel.

[The native bread of Tasmania, which grows under ground, like the truffle in England, and, like it, has a peculiar smell. It is edible, having formed, in a half-roasted state, a portion of the diet of the aborigines, and has been successfully tried in soup and in puddings by Europeans. This specimen is unusually large, having weighed 14½ lbs. in 1846, at present it weighs 10½ lbs.]

LOWES, T. Y.

191 *Mytilus Australis*, obtained at Glenorchy 17 years ago.

M'NAUGHTEN, —.

192 Writing-desk, of muskwood, inlaid with pine, blackwood, she-oak, and myrtle.

193 Dressing-case, or work-box, of the same materials.

MILLIGAN, J., *Argyll Street, Hobart Town*.

194 Necklaces of shells, as worn by the aborigines of Tasmania.

[The shell composing these necklaces seems to be closely allied to the *Phasianella*. It is very abundant in the various bays and sinuosities of the island. It possesses a nacreous brilliant lustre, which is disclosed by the removal of the cuticle, and this the aborigines effect by soaking in vinegar, and using friction. Various tints, black, blue, and green, are afterwards given by boiling with tea, charcoal, &c.]

WALKER, ABM., *Norfolk Plains*.

195 Plumbago (black lead).

[This specimen was found in a seam or vein about 5 inches thick, traversing schistose clay, overlying an old quartzose and crystalline limestone, in a shaft where lodes of lead and copper are expected to be realised.]

ROLWEGAN, —, *Collins Street, Hobart Town*.

196 Book, in one volume, printed and published in Van Diemen's Land, bound in colonial calf, gilt and lettered with gold leaf manufactured in Hobart Town from Californian gold.

MILLIGAN, J., *Argyll Street, Hobart Town*.

197 "Tasmanian Journal," three volumes, printed and published in Van Diemen's Land.

ANDERSON, —, *Liverpool Street, Hobart Town*.

198 Set of ladies' tortoiseshell combs.

BROWN, FIELDING, —, *Hobart Town*.

199 Candlestick, turned, of ironwood, from Norfolk Island (*Olea apetala*). The tops are turned from the root of the Norfolk Island pine (*Araucaria excelsa*).

MILLIGAN, J., *Argyll Street, Hobart Town*.

200 Snuff-box, turned of ironwood (*Olea apetala*).

201 Snuff-box, of muskwood of Tasmania (*Eurebia argophyllum*).

202 Snuff-box, of Huron pine.

203 Globular snuff-box, turned out of the tooth of the sperm whale.

204 Ladies' thread-holder, turned.

205 Ladies' puff-box, turned.

206 Goblet, turned.

MOSES, S., *Liverpool Street, Hobart Town*.

207 Jaw of a sperm whale, with forty-eight teeth, complete.

[The sperm whale *Physeter macrocephalus*. This species differs from the great whalebone whales, in having a row of large teeth in the lower jaw, and a few small ones concealed in the gum of the upper jaw; the spermaceti is contained in a large cavity on the outside of the skull above the cranium.—R. O.]

HULL, HUGH.

208 Half section of the trunk of the Tolosa tree (or *Pittosporum bicolor*). This is the wood of which the aborigines chiefly made their waddies or clubs.

M'NAUGHTEN, —.

209 Muskwood slab.

FREEMAN, REV. E., *Brown's River*.

210, 211 Veneer, of the oak of Tasmania (*Casuarina quadrivalvis*).

212 Piece of a knot of myrtle-tree of Tasmania.

213 Veneer of he-oak of Tasmania (*Casuarina stricta*).

214 Two veneers, of native cherry-tree of Tasmania (*Exocarpus cupressiformis*).

215, 216 Veneers of Tasmania honeysuckle tree (*Banksia Australis*).

DENISON, His Excellency Sir W. T.

220, 221 Half sections of a limb of honeysuckle.

222, 223 Half sections of a small she-oak tree.

MILLIGAN, J.

221 Section of a small stem of *Richea pandanifolia*, obtained at Macquarie Harbour. Specimen, sliced, bevelled, and French-polished, to show the pith, medullary rays, and beautiful markings of the wood.

[This plant grows like a palm, and attains the height of thirty to forty feet and ten inches diameter; it is confined to the dense wet forests on the western side of the island.]

SMITH, PHILIP, *Ross Reserve*.

222 Small bale of wool.

MILLIGAN, J.

223 Specimen of pinkwood (*Carpodontos lucida*) obtained at Macquarie Harbour.

[This tree attains an elevation varying from 100 to 150 feet in height, with a good clear barrel, and grows chiefly on the western side of the island in dense myrtle forests. The timber, which is fine-grained and very hard, has been used for making sheaves for ships' blocks.]

PECK, GEORGE.

224, 225, 226 Cribbage boards, veneered on pine, inlaid, &c.

- MILLIGAN, J.  
227 Butter-print of Huron pine (*Microcarys tetragona*).
- MOSES, CHAMPION, & Co.  
228 Right ivory teeth of the sperm whale.
- DENISON, His Excellency Sir W. T.  
229 Maple of Norfolk Island, a square specimen.
- MILLIGAN, J.  
230 Seven baskets, made by the aborigines of Tasmania.
- 231 Model of a water-pitcher, made by the aborigines of Van Diemen's Land.  
[This water-pitcher is made of the broad-leaved kelp, and is large enough to hold a quart or two of water. The only other vessel possessed by the aborigines for carrying a supply of water was a sea-shell, a large cymba, occasionally cast upon the northern shore of Van Diemen's Land, which contained about a quart.]
- STRUTT, WILLIAM, *Bath Street*.  
232 Marble, from Maria Island, partially dressed.
- BOYD, J.  
233 Marble, from Maria Island, cut and dressed as paper weights.
- TIBBS, —, *Goulbourn Street, Hobart Town*.  
234 Specimens of crockery-ware, made from the clay found in the domain.
- KERMODE, R. Q., *Mona Vale*.  
235 Small bale of wool—exhibited as a fine sample.
- JENNINGS, J. D., *Liverpool Street*.  
236 Churn, made of Huron pine (*Microcarys tetragona*).
- MOSES, S.  
237 Bundle of whalebone; an important article of export.
- SMITH, Lieutenant, R.N.  
238 Raspberry and currant jam.  
239 Green gooseberry jam.  
240 Red gooseberry jam. 241 Quince jam.
- ROAT, W.  
242 Bundle of curled horse-hair.
- SYMONDS, E.  
243 Corn riddle, coarse.  
244 Barley riddle, coarse. 245 Corn sieve, fine.  
246 Fire-screen, for chair-back; made of willow, grown, dressed, and dyed in Van Diemen's Land.  
247 Bottle basket, flat. 248 Bundle of willow rods.  
249 Fishing basket.  
250 Three double-handled baskets.  
251 Book basket. 252 Knife basket.  
253 Child's basket, round.
- MILLIGAN, J.  
254 Gum of Acacia (*Mucranata*); a shrubby tree on Flinders' Island, Bass's Straits.  
255 Guano, from Babel Island.  
256 Specimen of grey granite, from Flinders' Island.  
257 Granite, from the east coast of Van Diemen's Land.  
258 Granite, from the Hampshire Hills.  
259 Porphyritic granite, from Webb's Harbour.  
260 Limestone, from Fingal and Break-o'-day.  
261, 262 Limestone, with galena, from Norfolk Plains.  
263 Brown-clay iron ore, found near Fingal.  
264 Clay iron-stone. Found in beds, alternating with bituminous coal, near the Douglas River, on the east coast of Van Diemen's Land.  
265 Reddle—red ochre or red chalk. It occurs in masses of uniform and determinate shape, imbedded in alluvium of loam and earth.  
266 Ore of iron, from the Hampshire Hills. It is nearly pure iron; seems crystalline; and is highly magnetic,
- with polarity. It occurs in masses, at the line of contact between granite and basalt.  
267 Ore of iron.  
[This ore is found in nodules with quartz, in granite soil, near the Housetop Mountain, north-west of Van Diemen's Land; formerly used by the aborigines as a paint, being first peroxidized by roasting, and then reduced to a fine powder by grinding between two stones.]  
268 Ore of manganese, from the vicinity of the Frenchman's-cap Mountain.
- DENISON, His Excellency Sir W. T., *Tasman's Peninsula*.  
269 Two cross sections of the barrel of the blue gum tree.  
270 Limestone, from Maria Island.
- FLEGG, R. C.  
271 Wellington boots, of kangaroo skin, dressed in Hobart Town.
- DENISON, His Excellency Sir W. T.  
272 Specimen of calcareous grit, from Norfolk Island.
- MILLIGAN, J.  
273 Cake of bees'-wax, of Tasmania.
- SYMONDS, E.  
274 Key basket.  
275 Round basket, open. 276 Long basket.  
277 Straw hat, from Norfolk Island.  
278 Hoop for a sieve, made of Huron pine.
- MILLIGAN, J.  
279 Four models of canoes of the aborigines of Van Diemen's Land.  
[These are exact models of the large catamarans, in which the natives used to cross to Brune Island: the material is bark of the *Melaleuca squarrosa*.]
- COX, F.  
280 Case of Tasmanian insects.
- BONNEY, —.  
281 Case of Tasmanian birds.
- GUNN, W., & MILLIGAN, A. M., *Launceston*.  
282 Oil of the mutton-bird, or sooty-petrel (*Puffinus brevicaudis*).  
[This is an oil of a deep-red colour, and is obtained by pressure from the stomach of the young bird. It is said to possess virtue as a liniment in rheumatism, and it burns with a clear bright light. The sooty-petrel frequents certain low sandy islands in Bass's Straits, in vast numbers during the summer, burrowing to lay its solitary egg, and literally undermining the ground.]
- BROWN & Co.  
283 Oil of the southern black whale.  
284 Oil of the sperm whale. 285 Oil of the black fish.
- LOWES, T. Y.  
286 Oil of the shark.
- DENISON, His Excellency Sir W. T.  
287 Blood juice, obtained from a tree in Norfolk Island, which makes an indelible marking-ink, and is said to be used as a dye for calicoes, &c.
- MILLIGAN, J., & HULL, H.  
288 Gum kino, from the blue gum-tree, the stringy bark, and other *Eucalypti*.  
[This kino is said to be equal, as a medicinal agent, to the kino from the East Indies, and is yielded very profusely by the *Eucalypti*, after incision or injury.]
- BONNEY, —.  
289 Manna.  
[This specimen is an exudation from the leaves and delicate succulent twigs of the white gum-trees (*Eucalypti*



*mannifera*) of Van Diemen's Land, after their perforation by an insect in the summer. It soon exsiccates, and falls in the form of irregular tears; and during December, January, February, and March is usually very abundant. Its properties are similar to, but less powerful than those of the manna of the druggist.]

ABBOTT, JOHN.

290 Iron-sand, a fine emery-like substance, which occurs in thin layers on the sea-shore at Long Bay in D'Entrecasteaux Channel, being a deposit from water passing through iron-stone beds, percolating the soil, and depositing the metallic matter where it comes in contact with the salt water.

ROUT, W.

291 Honey of Tasmania. Two bottles, one of 1849, and one of 1850.

MILLIGAN, J.

292 Resin of Oyster Bay pine (*Callitris Australis*).

[This is a very white resin, found sometimes, but rarely, in tears of a bright amber tint, and scarce. The Oyster Bay pine is only found along a narrow strip of country near the sea, on the east coast of Van Diemen's Land, and islands adjacent.]

ROUT, W.

293 Bees' Wax, Tasmanian. Three cakes, unbleached.

[In no country, it is supposed, do bees thrive better than in Van Diemen's Land, or prove so productive with little attention; this is attributed to the mildness of the winter season, and the fact that many Tasmanian plants bloom throughout the winter months. The bee has now become naturalised in the forests, and many of the hollow trees are filled with the produce of their labour.]

BICHENO, J. E.

294 Alum, found near Bridgewater. It occurs as an efflorescence in caverns in the clayey rocks.

SMITH, Lieut., R.N.

295 Epsom salts (sulphate of magnesia); found in caverns on the side of the Dromedary Mountain, near the Derwent.

296 Gum of the wattle-tree (*Acacia mollissima* and *Dealbita*).

[Wattle gum exudes in streams during the summer season from fissures and accidental injuries to the bark, and soon hardens into tears and lumps of various sizes. It is equal to the gum-arabic of the shops, and used for the same purposes.]

LIPSCOMBE, F.

297 Ham, cured by Mr. Marshall.

HAINES, J., *Murray Street, Hobart Town.*

Pickles:—

298 Red cabbage. 299 Walnuts. 300 Cauliflower.  
301 Onion. 302 Mixed. 303 Tomata sauce.

DENISON, His Excellency Sir W. T.

304 Walking-stick, made of the solid side of the bone of a whale, with round head, turned out of the tooth of the sperm whale.

SCREEN, T.

305 Walking-stick, made of the solid side of the bone of a whale, with head turned, and cut to resemble a man-rope knot.

MILLIGAN, J.

306 Iron ores, from Long Bay.

[These ores occur in a bed about 7 or 8 feet thick, above sandstone, and at the foot of green-stone hills.]

MARRIOTT, Ven. Arch.

307 Walking-stick of the oak of Tasmania (*Casuarina quadrivalvis*).

LIPSCOMB, F.

308 Small round table, of Huron pine, inlaid.

DE LITTLE, R.

309 Galena, from the Tama River.

310 Iron ore; three specimens, found near York River, above limestone.

MILLIGAN, J.

311 Galena, from Macquarie Harbour. It occurs in a vein of mountain limestone, in the channel of Franklin River.

DENISON, His Excellency Sir W. T.

312 Coffee, from Norfolk Island.

MILLIGAN, J.

313 Wood opal, from Salt-pan Plains.

[It occurs in fragments of various sizes, scattered over the surface of the soil, above greenstone and sandstone.]

REES, —

314 Wattle bark, chopped, as it is prepared for the tannin.

MILLIGAN, —

315 Rock crystal (sp. 25).

[This mineral is found in angular pieces in the peaty soil above granite, and in rolled pieces on the sea-coast of Cape Barrow and Flinders' Island in Bass's Straits.]

MILLIGAN, J.

316 Beryl (*Aquamarine*); 30 specimens, varying from soft to very hard, and from blue to light green, in crystals and fragments more or less rounded and roughened, but having a brilliant lustre on the fracture.

317 Topaz, straw coloured; 300 specimens from Flinders' Island, Bass's Straits, in crystals and fragments, more or less worn, but preserving a high polish and great transparency; hard enough to cut glass.

318 Topaz, yellow; 40 specimens, from the same locality. The crystals exhibit more or less perfectly their natural faces and angles, and possess, with a brilliant lustre, very considerable depth of tint.

319 Topaz, pink-coloured; 30 specimens.

KEMP, GEORGE.

320 Cornelian from the margin of Derwent, opposite Hobart Town.

SHARLAND, W. S.

321 Thread lace, two kinds, made by a girl eleven years of age, at New Norfolk.

REEVES, —.

322 Wool. Sample of skin-wool.

323 Sample of skin-wool, scoured.

MILLIGAN, J.

324 Jet, or lignite, from Macquarie Harbour. In the cliffs, imbedded with this, is found a fossil resin, of a deep amber colour and agreeable perfume.

325 Limestone, from the Gordon River, where the formation is traceable nearly 50 miles.

BICHENO, J. E.

326 Limestone from the Mersey River, obtained near the Western Marshes, at a place noted for extensive caverns, between Hobart Town and Bridgewater.

327 Limestone from the foot of the Mount Wellington range.

AKERS, Lieut. R.E.

328 Section of Norfolk Island pine (*Araucaria excelsa*).

SLY, J., *Liverpool Street, Hobart Town.*

329 Pair of dress boots; the legs, fronts, linings, and straps of kangaroo-skin manufactured; and the soles, insoles, &c., of bullock-hide tanned in Van Diemen's Land.

FENTON, Mrs.

330 Honey of 1850.

## DOWLING, H.

331—333 The "Tasmania Calendar" for 1848, 1849, and for 1850.

## DENISON, His Excellency Sir W. T.

334 Potash from Tasmanian timbers, 26 lbs.; the result of experiments by the late Captain Stanley, viz., Blackwood, 6½ lbs.; wattle, 6 lbs.; the oak, 9 lbs.; peppermint, 2½ lbs.; gum (blue), 2½ lbs.

335 Red ochre, resulting from the decomposition of jasperous ore of iron.

336 Yellow ochre.

337 Specimens of marle.

338 White oak timber (*Lagunea* vel *Hibiscus Pattersonii*).

339 Specimens of the timber of pine (*Araucaria excelsa*).

340 Specimens of iron-wood timber (*Olea apetala*), said to be the most durable.

All from Norfolk Island.

## MILLIGAN, J.

341 Specimen of timber of Oyster Bay pine (*Callitris Australis*).

[This timber is used for agricultural implements and for fittings of houses; it is only to be met with along the coast of the colony.]

342 Specimen of greenstone, from Fingal; central vertical section.

[This is exhibited as a sample of the prevailing overlying rock of Van Diemen's Land, of which all the roads are made, and some houses and bridges are built.]

## BLACKBURN &amp; THOMSON.

343 Model of the bridge across the river Derwent, at Bridgewater, Van Diemen's Land, on the line of road between Hobart Town and Launceston.

[The model is constructed of Huron pine, and is upon a scale of a quarter of an inch to a foot. Erected by the exhibitors from their own design. The model was executed by W. Armstrong, under the direction of W. P. Kay, Esq., Director of Public Works in Van Diemen's Land. The length of this bridge is 960 ft., the breadth of the roadway is 24 ft., and it is raised 9 ft. above the highest high-water level. The bridge is raised upon piles, the total number of which is 363; the piles measure from 65 to 90 feet each in length, and are driven through mud and soft clay, the former 5 to 15 ft. in depth, the latter not ascertained. Continuous with the southern end of the bridge there is a solid causeway, extending to 2,350 ft. in length, with a breadth of 70 ft. The whole length of bridge and causeway is 3,331 ft. The work was begun in 1833, by Colonel, now the Right Hon. Sir George Arthur, and completed in 1849, under the government of his Excellency Sir W. T. Denison, at an entire cost of upwards of 50,000*l.* The navigation of the river has been secured by the construction of a moveable platform, or rolling bridge, at the third bay from the northern shore, 35 ft. in the clear. The longitudinal beams, upon which rests the platform or roadway of the moveable or rolling portion of the bridge, are shod with iron, and travel upon large flanged wheels, fixed upon a pier prepared for the purpose, and the mode of moving this rolling part is by powerful crab-winch, working on toothed rails fixed on the framing under the bridge, worked by men standing on the moving part and moving with it. The lateral platforms are also moved in and out by crab-winch fixed on the framing below.]

## THOMSON, JAMES.

344 Coloured sectional elevation of the bridge and causeway at Bridgewater, Van Diemen's Land.

## COUNCIL OF THE ROYAL SOCIETY OF VAN DIEMEN'S LAND.

345 Books and bookbinding; papers and proceedings of the Royal Society of Van Diemen's Land, volume the 1st. Printed by Messrs. Best, and bound by Mr. Rolwagan, Collins Street, Hobart Town. The lithographs by Mr. Thomas Brown, Macquarie Street. Bound in colonial calf-skins, tanned and dressed by Mr. Reeves. Gilt and lettered with gold leaf, manufactured from Californian gold, by Mr. R. V. Hood, Collins Street, Hobart Town.

## WATSON, JOHN, Hobart Town.

346 Plank of blue gum (*Eucalyptus globulus*); length, 146 ft., breadth, 20 in., depth, 6 in.

[The various species of *Eucalyptus* attain generally a great size both in girth and length in sheltered situations, where the forest is thick, where there is no grass, and where injury has never or very rarely been sustained from bush-fires. Blue gum has been measured upwards of 90 feet round near Tolosa, on the northern aspect of Mount Wellington range, and on the southern side, according to the Rev. T. J. Ewing, one of the species has been measured 102 ft. at 3 or 4 ft. from the ground. Another *Eucalyptus*, called stringy bark, exists near the Cam River, on the north coast, measuring 64 ft. of solid timber at 4 ft. from the ground; the tree, having somewhat the form of a four-sided column with its angles bevelled, is 200 ft. to the first limb, where it is estimated to be more than 4 ft. in diameter, giving the enormous cubic measurement in the trunk alone of more than 1,000 tons of timber.]

## GRANT, JAMES, Esq., Tullochgorum, Fingal.

347 Three ram fleeces:—

(1) Fleece from a hogget ram, weighing, after being scoured, 3 lb. 10 oz.

(2) Similar fleece, weighing 3 lb. 11 oz.

(3) Fleece from an older ram, weighing 4 lb.

RICHARDSON BROTHERS & Co., 17 St. Helen's Place.

Specimens of two sorts of wool.

## McLACHLAN, —.

348 Specimens of silicized wood from Van Diemen's Land.

[This magnificent tree was discovered on the estate of Richard Barker, Esq., of Macquarie Plains, Van Diemen's Land, 32 miles from the City of Hobart Town, in the district of New Norfolk; it was 12 ft. high, and imbedded in lava, and distinctly surrounded by two flows of scoria, which at some distant day had brought out the juices of the tree to its surface, and became by a combination of silex, completely vitrified, and surrounded the tree with a glossy surface, the interior of the tree producing opal wood. On a minute examination of the wood by Dr. Hooker, when here in the "Erebus," it has been discovered to be a species of tree not growing in the neighbourhood, and appears to be of the pine or coniferous species. It is conjectured it was originally thrown up by an eruption of a volcano to a considerable height, and came down with its heavy end first upon a bed of sand, and had there remained for ages. In describing the tree he says:—"The manner in which the outer layers of wood, when exposed by the removal of the bark, separate into the ultimate fibres of which it is composed, forming an amianthus-like mass on the ventricle of the stump in one place, and covering the ground with a white powder commonly called native pounce, is very curious." It is 10 ft. high, and when first discovered, 3 ft. 6 ins. diameter, and has been excavated at very considerable expense and labour, and was in a perfectly perpendicular position on the point of a ridge of rocks.]

INCE, W. H., Esq., *Chelsea*.—Proprietor.

349 A list of Australian birds, belonging to the late John Matthew Robert Ince, Esq., commander of H.M.S. "Pilot," and collected during the surveying service of H.M.S. "Fly."

1. *Ptilonorhynchus holosericeus*; male. 2. *Carpophaga magnifica*. 3. *Ptilonorhynchus holosericeus*; female. 4. *Nettapus pulchellus*; male. 5. *Nettapus pulchellus*; female. 6. *Pitta strepitans*. 7. *Nymphicus Novæ Hollandiæ*. 8. *Pezoporus formosus*. 9. *Alyone Diemenensis*. 10. *Merops ornatus*. 11. *Chalcophaps chrysochlora*. 12. *Trichoglossus porphyrocephalus*. 13. *Aprosmictus scapulatus*. 14. *Meliphaga longirostris*. 15. *Malurus Lamberti*. 16. *Alyone pulchra*. 17. *Aprosmictus erithropterus*. 18. *Petroica multicolor*. 19. *Falco frontatus*. 20. *Glyciphila fasciata*. 21. *Chrysococcyx lucidus*. 22. *Ptiloris paradiseus*. 23. *Pachycephala melanura*. 24. *Myzomela erythrocephala*. 25. *Zosterops chloronotus*. 26. *Dicrurus bracteatus*. 27. *Platyercus Brownii*. 28. *Geopelia humeralis*. 29. *Euphema pulchella*. 30. *Ptiloris paradiseus*; female. 31. *Haleyon Macleayi*. 32. *Trichoglossus Swainsonii*. 33. *Sericulus chrysocephalus*; female. 34. *Piezorhynchus nitidus*. 35. *Ptilinopus Swainsonii*. 36. *Malurus cyaneus*. 37. *Sericulus chrysocephalus*; male. 38. *Trichoglossus versicolor*. 39. *Melopsittacus undulatus*. 40. *Estrelida bella*. 41. *Nymphicus Novæ Hollandiæ*; male. 42. *Malurus Brownii*.

[These specimens illustrate the ornithology of Van Diemen's Land, as well as that of the Great Main of New Holland. The plumage of the *Chrysococcyx lucidus* (21), and the varieties of "Alyone," are especially beautiful, and admirably preserved.]

M'PHERSON AND FRANCIS, *Hobart Town*. (Agent,  
W. Francis, Corn Exchange, London.)

350 Sample of wheat, the growth of Van Diemen's Land, weighing 65½ lbs. per imperial bushel.

## NEW ZEALAND.

SOUTH AREA, Q. AND R. 32.

A VALUABLE and tolerably extensive collection of native and other products has been forwarded from this distant dependency of Great Britain. Among the raw materials are specimens illustrative of the geology of certain districts. Among these is some copper ore from a small island, distant a few miles from Auckland. To this ore the attention of the miner has already been directed, and a Company has been formed for its extraction. Other specimens from mines differently situated are also sent, and appear to indicate that extensive supplies may in a short time be obtained from this interesting country. Some blocks of lignite and Waikato coal represent some of the stores of mineral fuel possessed by the country. Sulphur and manganese have also been forwarded. The abundant store of iron contained in the iron-sand of Cooper's Bay, Auckland, has at length been made available for the manufacturer; and the first casting at Auckland Foundry in December 1850, has been sent for exhibition. The vegetable produce is also represented by some good specimens, such as those of *Phormium tenax*, or New Zealand flax, bark, dyes, Kauri gum, orchella, timbers, malt, and hops. The manufactures are few and simple, consisting only of coarse cloth, basket-work, leather, and some native curiosities. The following statistical facts relative to this country have been prepared by Captain Collinson:—

## STATISTICS OF NEW ZEALAND, 1850.

### 1. POPULATION.

| British.                |        |
|-------------------------|--------|
| In Chief Towns—         |        |
| Auckland . . . . .      | 4,000  |
| Wellington . . . . .    | 4,000  |
| New Plymouth . . . . .  | 1,000  |
| Nelson . . . . .        | 2,000  |
| Otago . . . . .         | 1,000  |
| Remainder . . . . .     | 8,000  |
| Total British . . . . . | 20,000 |
| Total Natives . . . . . | 80,000 |

Total British and Natives 100,000

### 2. EXTENT.

| Belonging to British.                    |               |
|------------------------------------------|---------------|
|                                          | Square Miles. |
| Arable land . . . . .                    | 10,000        |
| Pasture land . . . . .                   | 20,000        |
| Remainder: forest, mountain, &c. . . . . | 20,000        |
|                                          | 50,000        |

Total, 123,000 square miles, or about the size of Great Britain.

### 3. PRODUCTIONS.

Wheat, maize, and similar grain; sheep, cattle, pigs, and other live stock; flax, pine timber, copper, sulphur, iron, and coal—by British colonists and natives.

### 4. EXPORTS AND IMPORTS, 1848.

| Imports from                                       |          |
|----------------------------------------------------|----------|
| Great Britain (manufactures) . . . . .             | £5,200   |
| British Colonies (stock and raw produce) . . . . . | 170,000  |
| Foreign Countries . . . . .                        | 3,000    |
|                                                    | £225,000 |

| Exports of Wool, Oil, Flax, Copper, Timber, |         |
|---------------------------------------------|---------|
| To Great Britain . . . . .                  | £16,000 |
| To British Colonies . . . . .               | 22,000  |
| To Foreign Countries . . . . .              | 5,000   |
|                                             | £43,000 |

### 5. SHIPPING.

|                                     | No. of Ships. |
|-------------------------------------|---------------|
| To and from Great Britain . . . . . | 9 per annum.  |
| "    British Colonies . . . . .     | 90   "        |
| "    Foreign Countries . . . . .    | 40   "        |
| Small coasting vessels . . . . .    | 200   "       |

### 6. REVENUE AND EXPENDITURE, 1848.

| Revenue.                              |         |
|---------------------------------------|---------|
| From the Colony . . . . .             | £47,000 |
| Aid from British Parliament . . . . . | 51,000  |
|                                       | £98,000 |

| Expenditure.                        |                 |
|-------------------------------------|-----------------|
| Officers of Government, &c. . . . . | £62,000         |
| Public Works, &c. . . . .           | 34,000          |
|                                     | £96,000 — R. E. |

1 TYRREL, —.

Flax and wool.

2 MURCHISON, J. H., 10 *Holles Street, Cavendish Square*—Proprietor.

Copper ore from Kawan, a small island a few miles from Auckland, New Zealand.

3 COLLINSON, Rev. JOHN, *Gateshead*—Proprietor.

Geological specimens from New Zealand.

Specimen of iron-sand from New Plymouth.

Small bag made from New Zealand flax, by a lady.

Flax prepared by the natives; native pattern and dyes.

Mat of New Zealand flax; made by the natives.

4 ROBERTSON, J.  
Specimens of *Phormium tenax*, or New Zealand flax.  
1 Coarsest flax. 2 Owee best cordage flax. 3 Dressed Owee flax. 4 Tihore. 5 Dressed Tihore. 6 Flax dressed by Europeans. 7 Flax in the leaf.

Specimens of rope and wool-lashing.  
Coil 4-inch warp, tarred. Shark line. Hand lead-line. Coil 4-inch tarred shroud-rope. Coil 3-inch tarred rope. Coil 2½-inch rope, tarred. Coil rattlin, tarred, 1½-inch. Coil wool-lashing. Fishing line, Harbuka. Coils white rope.

[New Zealand flax is obtained from the leaves of the plant botanically termed *Phormium tenax*. It is indigenous, and flourishes in marshy places. There are several varieties; the coarse is not much esteemed in this country, but the finer kinds are of great beauty and value for textile purposes.—R. H.]

5 McVAY, J.  
Specimens of leather and skins.  
Kip leather. Crop leather. Half-dozen sheep skins. One good sheep skin (not tanned).  
Specimens of barks: Towai, tanning bark. Tanekaha, tanning bark. Hinau, black dyeing bark.

6 SMITH, J. A.  
Specimen of soap, manufactured in Auckland.

7 ST. JOHN'S COLLEGE, *New Zealand*.  
1 Specimens of cloth and hat. Manufactured by a native lad, aged 17 years, from wool grown, cleansed, carded, spun, and woven, at St. John's College, and dyed with native woods.

2 Hat manufactured by Nicholas Cod, pensioner, Howick, New Zealand.

Specimens of basket work:—  
1 Basket, manufactured of Mange Mange, which is esteemed by the natives for its durability. Their eel baskets, made of this, last for a very long period.

2, 3 Baskets made of supple-jack, obtainable in the New Zealand forests from the eighth of an inch to a foot in diameter. By J. Meagher, pensioner, Howick.

8 HARGREAVES, J.  
Specimen of lignite, obtained from the banks of the Tamaki, in the vicinity of Auckland.

9 GREENWOOD, W.  
Specimens of coal, showing the strata of the exhibitor's coal mine at Matakana, 15 miles north from Auckland.

10 CONNELL, W. (*as Secretary of the Auckland and Waikato Coal Company*).  
Specimens of Waikato coal; distance from Auckland 35 miles, and 10 miles from Manukau Harbour.

11 TAYLOR, J.  
Specimens of the copper series from the Kawau Company's mine, Kawau.

1 Killas. 2 Gossan. 3 Copper ore, from the upper part of the Lode. 4 Manganese, found near the Copper Lode. 5 General character of the copper ore. 6 Copper regulus, No. 2. 7 Copper regulus, best, No. 1.

[It should be explained that the *Killas* is the clay slate rock in which these minerals occur. *Gossan* is a peroxide of iron, derived in most cases from the decomposition of the double sulphuret of iron and copper, and ordinarily found upon the "backs" of lodes. In many cases the gossans have been found to contain considerable quantities of silver.—R. H.]

12 REEVE, J.  
Specimens of copper ore from Messrs. Whitaker and Heale's mine, Kawau.  
1 Yellow ore. 2 Blue ore.

[The yellow ore is copper pyrites, that is, a sulphuret

of iron combined with sulphuret of copper, and the term blue ore is sometimes applied to the true sulphuret of copper, called also grey ore, and to the blue carbonate of copper.—R. H.]

13 LEWIS, T.  
Specimens of copper ore.  
Specimens from Great Barrier Island Mine, 35 miles N.N.E. of Auckland.

14 SMITH, J. A.  
Two specimens from Brodie's mine, Mongonui, 100 miles to the northward of Auckland.  
Specimen of iron sand, obtained in large quantities in Cooper's Bay, Auckland.  
Specimen of sulphur, from White Island, Bay of Plenty, on the east coast of the Northern Island, New Zealand.

15 MEURANT, E.  
Specimen of pumice stone, from the banks of the river Waikato.

16 BROWN, W.  
Specimen of Kauri gum, obtainable in any quantity in the northern part of New Zealand, ranging from 20 miles south of Auckland to the North Cape.

17 GREENWOOD, W.  
Specimens of building stone:—  
Scoria from the vicinity of Auckland, obtainable in any quantity. Stone from Matakana, 15 miles from Auckland: brought to Auckland in blocks of large size, and used in the Ordnance buildings.

18 BROWN, W.  
Specimen of limestone, from Wangarei, 60 miles to the northward of Auckland.

19 SMITH, J. A.  
Specimens of Roman cement stone, found in large quantities on the banks of the Tamaki.  
Specimen of sharks' fins, which can be obtained in large quantities, and are suited for the China market for a native basket or kit.

Specimens of flax seed and orchilla weed:—  
1 Flax seed (*Phormium tenax*) for oil.  
2 Orchilla weed, collected in the vicinity of Auckland.

20 BALNEAVIS, Lieut. H. C., H.M. 58th Regt.  
Specimen of a New Zealand war pah, on a scale of half an inch to six feet.

21 JOHNSON, J.  
Specimens of New Zealand furniture woods:—  
1 Kauri (*Dammara Australis*). 2 Rimu (*Dacrydium cupressinum*). 3 Hakehake. 4 Hakerautangi. 5 Matai. 6 Kakikatea (*Dacrydium excelsum*). 7 Rewa rewa (*Knightia excelsa*). 8 Pohutukawa. 9 Wairangi pirau (or New Zealand sandal wood). 10 Manuka (tea tree). 11 Totara (*Podocarpus totara*). 12 Hakerautangi. 13 Kohe. 14 Hinau. 15 Tanekaha (*Phyllocladus trichomanoides*).

22 THE WAIKATO COAL COMMITTEE, *Auckland*.  
Specimen of coal, weighing 2 cwt.

23 PURCHAS, Rev. A.  
Specimens of iron ore and limestone.  
1 Iron ore, from Manukau.  
2 Limestone, from Kawhia.

24 LOW & MOTION.  
Specimen of native grown maize.  
Specimen of Maori wheat and flour.

- 25 CARADUS, J.  
Specimens of New Zealand flax (*Phormium tenax*).  
1 New Zealand flax, hackled. 2 Net twine. 3 Shop twine. 4 Fishing line. 5 Hand lead-line. 6 Marline.
- 26 KING, Miss, *New Plymouth*.  
Reticule, made of New Zealand flax (*Phormium tenax*), dyed from New Zealand woods, the pattern and work copied from the mat of a New Zealander.
- 27 LIGAR, C.  
Model of White Island, New Zealand. In native sulphur. On a scale of 10 inches to a mile.  
Also a drawing of the place, by C. Heaphy.
- 28 TYRREL, J., Professor.  
Specimens of native flax and wool.
- 29 SMITH, J. A.  
Specimen of oil, from the hump-backed whale, caught at the Bay of Plenty. The sperm and black whales are also caught in New Zealand; but the bottles containing the specimens of their oil have been broken.
- 30 MCLEOD, R.  
Specimens of manganese, from Brown and Campbell's land at Waihaka, 15 miles from Auckland.
- 31 Specimen of flour presented by the natives of Rangiorua, from wheat grown by Maories, and ground by their own mills (turned by water).
- 32 WHITELEY, Rev. J.  
Specimen of a native box of papa mahuara, in which the natives keep their head dresses.
- 33 TAYLOR, T. E.  
The grub of "Sphinx" destroyed by a vegetable fungus found under the rata tree.  
[It is a remarkable fact that, in the instance mentioned, which is one of not uncommon occurrence, and in others which are on record, the powers of animal vitality have been overcome by those of vegetable organization. The fungus in question penetrates into the entire body of the insect, ramifying to the very extremity of its most delicate and slender organs. For a time the insect lives with its diseased part, but ultimately it dies a victim to the active development of the fungus.—R. E.]
- 34 WHYTELAW & SON.  
Specimen of flax, cleaned by machinery.
- 35 BOURNE, W.  
Specimen of iron-casting. The first casting at Auckland Foundry, 18th December, 1850, cast from iron-sand found in Cooper's Bay.
- 36 MCLEOD, R.  
Specimen of salted mullet; can be obtained in great quantities, and well suited for India and China markets.
- 37 MOORE, F. G., 30 *Arundel Street, Strand*, Proprietor.  
Lithographic picture of a native village, or Pah, in New Zealand, situated in Cook's Straits. The figures in the foreground are all portraits, and the original large picture now in London was painted in the colony. This picture is faithfully descriptive of a portion of the beautiful scenery of New Zealand, and of the habits and customs of the natives. It is a valuable record of the early history of the colony, by Professor Gilfillan.  
Six water-colour drawings and six steel engravings of New Zealand subjects.  
Four native mats or garments.  
One greenstone Mari or chief's club. Three specimens of greenstone.  
One carved box. One war-club. Native fishing-net and fishing-hooks. Two bottles of insects. Specimens of native grasses. Large map of New Zealand.
- 38 ARTICLES forwarded from *Wellington, New Zealand*, by the "Lord William Bentinck."  
Table-top composed of 19 specimens of Taranaki woods, as per diagram accompanying same.  
Sample of Mokau coal.  
Native basket containing four hanks of flax, two dyed, one (black) with the hinau.  
Flax fishing-line and saddle-girth, native made.  
Parcel, 10 baskets made of kie kie, and dyed with hinau.  
Puriri, or iron wood. Rimu. Mairi. Miro. Kaiwiria.  
New Plymouth iron-sand in its natural state, unwashed.  
Packet containing a substance collected from the earth in the town of New Plymouth, supposed to be alum in a very pure state.  
Barley from T. Renwick, Nelson.  
Malt made and hops grown by Hooper and Co.  
Barley and hops grown by H. Martin.  
Totara wood. Flax.  
Coal from Massacre Bay, taken from an open pit on the beach about eight feet deep, exposed to the action of the sea; the seam is 5 feet thick, and has a dip of about 1 in 7.  
Limestone, from same place as coal.  
Native fish-hook, made with a shell only. Native mat.  
Box of sundries, list enclosed, Rev. R. Taylor.  
Footstool, embroidered with New Zealand flax, R. Cameron.  
Specimens of dyed flax, R. Cameron.  
Specimens of cleaned flax in various stages.  
Leather tanned in Wellington with New Zealand materials exclusively.  
Baskets made of kareac.  
Baskets made of willow grown in the Kent and Canagreen moss, from the harbour of Port Nicholson, collected by Colonel McCleverty.  
Flax, prepared by J. Duncan.  
Native knives, formerly used for cannibal purposes.  
Picture of Port Victoria, in frame of New Zealand wood, R. Hart.  
Hat of native manufacture, and slings used by the natives for carrying burdens.
- 39 Malt and hops, made and grown by Hooper and Co.  
Coals from Massoere Bay, taken from an open pit on the beach.  
Sandstone, native fishfork and net.  
Specimens of dyed flax, tanned leather.
- 40 LUCAS, R., & Co., 35 *South Audley Street*.  
Specimens of New Zealand woods:—Octagon table, top veneered with 11 specimens of New Zealand woods. A sofa table, top veneered with three specimens of New Zealand woods. A small circular inlaid table on three twisted columns, carved claws, &c. A what-not, with twisted columns, veneered with three specimens of New Zealand woods. A what-not, with twisted columns, veneered with one specimen of New Zealand wood. A papitière, with hinged flap and sliding screen panel, fluted with green silk, &c.

OFFICIAL  
Descriptive and Illustrated Catalogue.

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FOREIGN STATES.





NORTH AND SOUTH AREAS, C. TO E. 58 TO 61; F. 59 TO 61; K. 59, 60;
 L. TO P. 58 TO 62; Q. R. 56 TO 61; S. 57 TO 61.
 NORTH EAST CENTRAL GALLERY, I. 59 TO 61.
 SOUTH EAST CENTRAL GALLERY, M. 58 TO 61.
 SOUTH EAST GALLERY, N. O. 58; P. 59 TO 63.

Commissioners, CHEVALIER DE BURG, and CHARLES BUSCHER, Esq., 43 Clarges Street, Piccadilly;
 Custom-house Agent, C. J. MAJOR, 21 Billiter Street.

The Austrian productions form a highly-interesting feature in the Great Exhibition. About seven hundred and fifty exhibitors appear as the representatives of this important territory; and the articles forwarded by them must be acknowledged to have added a large share to the attractions of the Foreign side of the Building. So large a portion of annotatory matter has been introduced, in such places as appeared to be most suitable in the body of this Catalogue, that it is rendered less necessary to offer a lengthened introductory notice. To the matter so introduced it is merely necessary to add the remark, that originating from the best-informed sources, and conveying a very large amount of useful knowledge, not to be readily met with in any other work, it has been inserted with very little abbreviation. The raw materials are largely represented, and by a most interesting selection of objects illustrative of the mineral wealth of this monarchy.

"Austria abounds in every description of metal. All the more useful kinds, with the exception of platinum, are to be found therein; and in the production of the precious metals, Austria is surpassed by Russia alone. Transylvania is one of the richest countries of Europe in gold; Hungary, also rich in gold, is still richer in its yield of silver. Bohemia ranks next to Hungary in this respect, and Transylvania immediately after Bohemia. In the production of quicksilver, Austria, by reason of her possession of Carniola, stands next to Spain. Bohemia supplies excellent tin, Carinthia the purest lead, and Hungary is extremely rich in copper. Iron is produced throughout the countries of this empire, the only exceptions being Görz and Gradisca, Illyria and Venice. Styria is pre-eminent in respect both of the quantity and the quality of its iron, which is considered equal to any raised in Europe. Fossil and brown coal the Austrian dominions may be said to possess in inexhaustible abundance, and, in consequence, mining has been carried on in these regions with peculiar spirit and energy. Due advantage has been taken of the progress of modern science in so pushing the advancement of this branch of the national industry, that though it cannot be said to have attained the utmost degree of development which it may be capable of reaching, yet it must be allowed to have closely approximated to it."

Minerals, metals and their ores, chemicals, agricultural productions, silk raw and manufactured, models of machinery, carriages, and a variety of objects illustrative of the other classes of the Exhibition, are found in this collection. Numerous philosophical and musical instruments are also shown. The textile manufactures, and leather, paper, books, and printing are adequately illustrated in the various articles belonging to their classes. In glass manufactures Austria has long been pre-eminently distinguished, and the specimens exhibited sustain her celebrity. The metal manufactures are also illustrated by the contributions of a considerable number of exhibitors, whose productions bear comparison with the universally celebrated hardwares of England. Beautiful examples of porcelain and common wares are exhibited. The miscellaneous objects represent in an interesting manner those variations in the products of foreign artizans which characterise them, and distinguish them from our own. Universal interest is excited by the fine specimens of statuary and other art productions exhibited by Austria. The suite of rooms containing the articles made by the Messrs. Leistler, of Vienna, is one of the most interesting features in the Austrian department, and presents an imposing picture of the luxurious furniture of the nobility of Austria. The state bed, with its appendages, the dining-tables, sideboard, and chairs, exhibit a lavish outlay of ornamental labour. One portion of this furniture, a carved Gothic lookcase, is designed as a present to Her Majesty the Queen of England from His Majesty the Emperor of Austria.—R. E.

1 MIESBACH, ALOIS, *Vienna*—Proprietor.

Coals, brown coals, and lignite, from Lower Austria, Upper Austria, Styria, Moravia, and Hungary.

[The coal mines of this exhibitor are the most extensive in the empire: his thirty mines contain a store of at least 900,000,000 cwt. of coal, whereof 864,000,000 have been discovered by himself. They give direct employment to 1,961 men, produce annually 2,750,000 cwt. of coal, and are already in a condition to furnish four times that quantity, although the greater part of them are only now being opened and prepared for working.]

Coal is found in Austria in constantly increasing quantities, particularly in Bohemia, Moravia, Sillesia, Lower Austria, and Hungary. Bohemia takes the first place as to the quantity, and partly, also, as to the quality of its coal, nearly half of the total quantity of the coal and brown coal produced in Austria being Bohemian. Considered generally, however, the production of coal is only trifling at present.

The production of coal, in 30 years, has increased tenfold; and at a rapid ratio. The prices of wood and charcoal are constantly increasing, with an annually increasing demand for fuel to be consumed in factories, &c. It is, therefore, very probable that the collieries of Austria will, at no distant period, be worked to a far greater extent than at present. Scarcely 100,000 cwt. of coals are extracted in a year from coal-fields that are known to contain as much as 1,500 millions of cwt. The exports of Austrian exceed the imports of foreign coal by about 300,000 cwt. A large proportion of the fuel obtained in Austria is lignite. This substance, which is intermediate in its character between wood and coal, and is of a brown colour, possesses considerable value as a calorific agent, although it is in this respect inferior to the ordinary coal of Great Britain. Its importance to the countries and districts where it is found can scarcely be exaggerated, and its abundance justifies the belief that the enormous thick detached beds in which it occurs will ere long be fully worked. The lignite not unfrequently presents those evidences of its origin from the decomposition of coniferous trees, from which the geologist draws his most accurate inferences.—R. E.]

Specimens of alum.

2 IMPERIAL MINES, *Vienna*.

Mercury and cinnabar, and ores of the same, from Idria.

[A large quantity of mercury or quicksilver is annually produced at Idria, a town in the duchy of Carniola, the inhabitants of which are chiefly occupied in its extraction. The quicksilver mines are extremely productive. The cinnabar ore yields when very rich fifty per cent. of this metal. This ore is a sulphuret of mercury, and gives up the latter metal by sublimation.]

With the quicksilver mines of Idria is connected a manufactory of vermilion, which produced, in the year 1847, 981 cwt. of that pigment. The residue of the quicksilver is used up to some small extent, about 300 cwt., for technical purposes and preparations, but the greater portion of it is sent abroad. The exports of quicksilver amount to an annual average of 2,341 cwt. (in the year 1846 they reached 5,478 cwt.), and of preparations derived from it, such as corrosive sublimate, calomel, &c., to 41 cwt. By the consumption of quicksilver, for the manufacture of vermilion and for other technical purposes, the value of the annual produce of the raw material is greatly increased. The mines have been

worked for upwards of three centuries and a half, and were originally discovered by an accident.—R. E.]

Sulphur, from Szwozowic in Galicia, and Radoboj in Croatia.

Rosette-copper, from Agordo in the province of Venice and Moldava.

Blistered copper, from Schmöllnitz in Hungary.

Tin, from Schlaggenwald in Bohemia.

[Tin, a metal which of late years has become of so much importance in the occupations of manufacturing industry, is not found within the Austrian monarchy in sufficient quantity to meet the demand for it. The imports of tin from abroad during the same period of five years, 1843 to 1847, amounted on an average to 3,785 cwt. annually, whilst the exports of this article were but 90 cwt., value 4,500 florins. But, whereas the imports of tin wares were, for the same time, inconsiderable, the exports under this head amounted to 304 cwt.]

Litharge, from Pzribram in Bohemia.

Zinc, antimony, and similar mining produce.

3 UPPER HUNGARIAN MINING ASSOCIATION,

Schmöllnitz, Hungary.

Quicksilver, refined copper, block copper, and various other similar productions for smelting.

[The whole quantity of raw copper raised in Austria is not used there. Until the year 1847, indeed, the imports of copper into Austria were greater than the exports from it; the excess of the former, as compared with the latter, during the years 1843 to 1846, averaging about 3,000 cwt. annually; but since 1847 these exports have been considerably in excess of the imports. In the year 1847 the imports reached 8,667 cwt., while the exports were 28,254 cwt.; but in the year 1848, for 3,891 cwt. imported there were 5,489 cwt. exported, so that, out of the whole production of that period, 58,568 cwt. remained in Austria. It should, however, be borne in mind that the copper found in Austria does not equal the Russian or the Swedish copper in quality, and that it is therefore indispensable to draw a supply of the finer sorts from abroad. Of the quantity produced beyond the amount that she exports, about 40,000 cwt. are converted at the copper-mills and rolling-works into 38,400 cwt. of copper sheeting and hollow ware (the Government establishments produced, in the year 1847, 6,562 cwt. of such ware and copper sheeting), and the remaining 18,568 cwt. were used for various alloys and other purposes. Copper acquires its highest increase of value when employed in the manufacture of percussion-caps, galvano-plastic productions, and brass hardware. Austria drives a brisk trade in articles of copper and brass with foreign customers.]

4 SZUMRÁK, JOHANN FRIEDRICH, *Neusohl, Hungary*

—Proprietor.

Cobalt and nickel ores, from Bocza, together with the residue obtained from the same.

Calcareous slate, from Molesa in Hungary.

Analysis of the above residue:—

Ferdinand Level.	Dreibröder Level.
The raw ore contains 61·8 per cent. residue.	The raw ore contains 54·8 per cent. residue.
The residue:—	The residue:—
Nickel 22·546	Nickel 17·224
Cobalt 19·886	Cobalt 16·430
Copper 9·719	Iron 8·102
Iron 15·403	Bismuth 7·644
Arsenic, sulphur, &c. 32·416	Copper 2·101
	Arsenic, sulphur, &c. 48·499
100·	100·

[The ores of cobalt and nickel have only recently been obtained on a large scale in Hungary, the mines having only been in work for a few years. Both these valuable metals are yielded freely by the ores, which promise to become of considerable commercial interest when this department of industry becomes fully developed.]

5 **KOCHEMEISTER, FRIEDRICH, Pesth, Hungary—**
Proprietor.

Two kinds of spongy nickel from Hungarian ores; red and black oxide of cobalt. The varieties contain 97 and 98 per cent. of the pure metal, free from arsenic, and are well adapted for the manufacture of German silver.

6 **SÁFY, ALEXANDER (Manager of the Philippi Jacobi Mine), Rosenau, Hungary.**

Samples of nickel ores.

[The metallic wealth of Hungary has as yet been scarcely revealed. The extensive mineral deposits of the country have hitherto been worked chiefly by the state, and little opportunity has consequently arisen for commercial enterprise. It appears probable that ultimately the advantages of this mode of developing the resources of the country will be more fully perceived and appreciated.—R. E.]

7 **ZEMBERG MINE, Dobschau, Hungary.**

Ore of cobalt, and nickel.
Flower of cobalt, and nickel.

8 **KENGYEL, JOHANN (Manager of the Johannes Mine), Rosenau, Hungary.**

Samples of Nickel ore.

[The annual produce of this mine is estimated at from 300 to 350 cwts.]

9 **BATEA, WENZEL, Prague, Bohemia—Manufacturer.**
Bohemian mineral produce. Ores of uranium, nickel, vanadium, and cobalt. Oxide of iron, and various minerals.

[Uranium is a very rare metal, and occurs principally in two minerals, uranite and pitch-blende. Its oxides are used with success for enamel painting, and produce also a beautiful tint when employed in small quantities for colouring glass. Vanadium is a metal still more rare than the preceding, occurring in minute quantities in several iron ores. Cobalt is used extensively in the arts; and the beautiful blue colour communicated by it to glass, in the pigment called smalt, is well known.—R. E.]

10 **SZEGŐ, SIGISMUND (Manager of the Michaelis Mine), Rosenau, Hungary.**

Antimony, and antimony ores.

11 **GEISZBERGER, FRANZ (the Francis Smelting-works), Metzenseifen, Hungary.**

Regulus of antimony.

12 **SZOLLCSZ, CARL (Biserto Smelting-works), Rosenberg, Hungary.**

Regulus of antimony.

13 **VOLDEBAUER, GEORGE, Salzburg—Proprietor.**

Specimen of arsenic ore.
White and yellow arsenical glass.

14 **HOCHBERGER, JOHANN (St. Procopi Chemical Works), Kahr, Bohemia—Proprietor.**

Sulphate of iron.
Alum and sulphur.

[Sulphur is obtained in Austria in constantly increasing quantities; latterly, however, the consumption has become greater than the production, and, consequently, the imports of this article, so much required for

chemical purposes, have exceeded the exports. A large quantity of alum is also manufactured in Hungary, Bohemia, Styria, and Silesia. Of alum, 89,113 cwt., whereof 15,371 cwt. were the production of Hungary, 14,750 cwt. of Bohemia, 5,000 cwt. of Styria, and 2,887 cwt. of Moravia and Silesia. The supply thus furnished of those products does not only cover the entire demand for them from the interior, but a surplus remains for exportation.

On an annual average 3,674 cwt. of alum, and 1,338 cwt. of the various kinds of vitriol, were imported from abroad; whilst the exports for the like term were 5,681 cwt. of alum, and 12,492 cwt. of vitriol.

Alum and sulphuric acid are so largely used in the arts as to form important articles of commerce in all countries.—R. E.]

15 **SCHÖNBORN, ERWEIN, COUNT VON, Dlazkovic, Bohemia—Proprietor.**

Rough Bohemian garnets (*Pyrope*).

16 **PRINCE FERDINAND VON LOBKOWITZ, DUKE OF RAUDNITZ, Bilin, Bohemia—Proprietor.**

Rough cut and pierced Bohemian garnets (*Pyrope*).

[The garnets of Bohemia have long enjoyed a reputation little inferior to the celebrated stones of the East. Their brilliancy and colour render them extremely valuable as articles of commerce and for ornamental uses. They occur chiefly in the neighbourhoods of Swietlau and Dlaschkowitz. Garnet is chemically an anhydrous silicate of lime and of alumina. Those exhibited have a beautiful red colour. Rough garnets are sold by the pound. When cut and pierced they are sold in rows containing 100 pieces to each row.—R. E.]

17 **IMPERIAL SALT WORKS, Wieliczka, Galicia.**

Samples of culinary salt.

[This important article, salt, forms the object of a State monopoly, and is of three descriptions—rock, boiled, and sea salt. The aggregate quantity produced is, on an average, 6,000,000 cwt. per annum, whereof 10 per cent. is sea salt, 36 per cent. boiled, and 54 per cent. rock salt.

In the year 1847 there were 211,000 cwt. of sea salt imported for the consumption of the Lombardo-Venetian provinces; whilst 895,400 cwt. of rock and boiled salt were exported: namely, 678,000 cwt. to Russia, 116,800 cwt. to Prussia, 48,000 cwt. to Turkey, 45,100 cwt. to Switzerland, and the residue, in smaller proportions, to Bavaria and Lichtenstein.]

18 **WEBER, GIOV. DAVIDE, Venice—Manufacturer.**

Samples of fine cream of tartar.

19 **WAGENMANN, SEYBEL & Co., Vienna—Manufacturers.**

Chemical productions, including tartaric acid, vinegar, acetic acid, acetate of soda, arsenic acid, chloride of lime, arseniate, sulphate, and muriate of potash.

[The production of chemical preparations, especially of those which have been brought forward by the great progress of manufactures in general, has latterly, owing to this impulse, furnished important results. Bohemia has especially distinguished herself by the manufacture of colours and of chemical preparations used in dyeing, whilst Vienna has not remained behind. Several of these productions—acids, and easily inflammable articles, salt-petre, phosphorus, &c.—are not exhibited, on account of the danger of carriage.

Saltpetre is also an article of State monopoly, but is chiefly manufactured by private individuals, who are bound to deliver their productions to the State. The refining, on the contrary, is principally provided for by the State itself. In 1847, the quantity of saltpetre produced amounted to 21,600 cwt. This was chiefly applied to the manufacture of gunpowder, and also to other purposes. The progress of this trade, however, is but inconsiderable.

Soda and potash are produced in Hungary in large quantities. The crystallized soda found on the soil is estimated at 30,000 cwt. annually, and the entire production of soda in Hungary, at 40,600 cwt., whereof about 10,400 cwt. are distributed over the other provinces. In these last, altogether, the same quantity is produced as is raised in Hungary alone; and there is to be added thereto the amount of the excess of imports (56,000 cwt.), over exports (55,000 cwt.), being 1,000 cwt.

Of potash about 350,000 cwt. are produced, and of this quantity 200,000 cwt. in Hungary, the remainder chiefly in Galicia. The production not only covers the whole demand for home consumption, but leaves a considerable excess for export. Thus, in the year 1847, the imports of potash amounted to 11,900 cwt., whereas the exports were 41,900 cwt.]

20 **BROSCHER, FRANZ XAVER, Prague, Bohemia—**
Manufacturer.

Chemical productions, including succinic acid, tartaric acid, sesqui-oxide of chromium, sesqui-oxide of uranium, and mercurial compounds.

[In the manufacture of salts and acids for dyeing, and other purposes, considerable progress is being rapidly made. The fortunate results that have rewarded the activity of Bohemia in the expansion and improvement of chemical manufactures, which had their commencement in its territory, have excited the other provinces of the monarchy to follow her example in similar undertakings. Lower Austria already occupies a respectable place. In Upper Austria, Styria, the Tyrol, and Lombardy, the fact of this progress is not to be denied; but Carinthia possesses the most important manufacture of white lead, being favoured by nature with abundant ores of excellent pure lead.]

21 **BRAUN, G. JACOB, Prague, Bohemia—**Manufacturer.

Albumen, stannate of soda, and ferrocyanide of potassium.

22 **ENGELMANN, SAMUEL, Karolinenthal, near Prague—**Manufacturer.

Albumen, dextrine, laiogome, and artificial gum.

23 **SETZER, JOHANN, Weiteneggk, near Molk, on the Danube—**Manufacturer.

Ultramarine blue, in eight shades. Ultramarine green. Cadmium yellow. Red and rose madder.

24 **KUTZER & LEHRER, Prague—**Manufacturers.

Ultramarine blue, in eight shades. Ultramarine, green and black. Various colours, including chrome yellow, chrome red, &c.

25 **FIALA, WENZEL, Prague—**Manufacturer.

Indigo blue of three kinds.

26 **HEINZEN BROTHERS, Tetschen on the Elbe, Bohemia—**Manufacturers.

Red and violet herb archil. Red and violet extract of archil. Specimens of dyed wool, from which the above have been used.

27 **KINZLBERGER & Co., Prague—**Manufacturers.

One hundred and eighty samples of colours.

28 **PETZ, W., Pesth, Hungary—**Manufacturer.

Carmines of two kinds.

29 **RATTICH, JOHANN B., Atgersdorf, near Vienna—**Manufacturer.

Black ink for copper-plate printing.

30 **HERBERT, FRANZ PAUL BARON VON, Klagenfurt and Wolfsberg, Carinthia—**Manufacturer.

White lead of different kinds.

31 **EGGER, GUSTAV, COUNT VON, St. Veith, Carinthia—**Manufacturer.

White lead of various kinds.

32 **HERBERT, IGNAZ, BARON VON, Klagenfurt, Carinthia—**Manufacturer.

Orange and bright red lead. Red and gold litharge.

[The lead mines of Carinthia supply a most pure and valuable description of lead, and are extensively worked, not merely to meet the home demand for that metal, but to supply the staple of a considerable foreign trade which has sprung up. Thus, whilst during a period of five years, from 1843 to 1847, the average yearly imports of lead ore amounted to 142 cwt., and those of raw lead to 22 cwt., and of cast and rolled lead to 26 cwt., the exports during the same interval averaged, respectively, 6,182 cwt., 2,672 cwt., and 1,288 cwt. The imports of litharge were inconsiderable, and the exports amounted to 1,800 cwt.]

33 **DIEZ, ERNST, Villach, Carinthia—**Manufacturer.

White lead of different kinds.

[The lead mine in the neighbourhood of Villach, in Carinthia, is a very extensive and productive one, and has been considered to be one of the largest sources of this metal in the Austrian empire.]

34 **BIGAGLIA, PIETRO (late LORENZO), Venice—**Manufacturer. (Agents, Fordati, Coxhead, & Co., 13 Old Jewry Chambers, London.)

Selected samples of white lead, litharge, and verdigris.

35 **HARDTMUTH, LUDWIG & CARL, Vienna—**Manufacturers.

Specimens of Naples yellow. Various pieces of artificial pumice-stone.

36 **SCHABAS, JOHANN, Ottercräng, near Vienna—**Patentee.

Patent artificial pumice-stone of different kinds.

37 **ROHLIK, LAURENZ, Prague—**Inventor and Patentee.

Patent artificial Carrara marble, a new invention, particularly adapted for vases, candelabra, lustres, chandeliers, argentine lamps, drawing-room ornaments, furniture, and mosaic pavements.

38 **CRISTOFOLI, ANTONIO, Padua—**Manufacturer.

Eight samples of paving blocks, and columns of artificial marble.

- 39 **APOLLO CANDLE COMPANY, Vienna.**
Stearine and stearine candles.
[The manufacture of stearine candles and soap, although the former was introduced only a few years ago into Austria, has already obtained an important position. Of the numerous manufactories established in this line in all parts of the empire, the most important have contributed to the Exhibition.]
- 40 **MILLY CANDLE MANUFACTORY, Vienna.**
Stearine and stearine candles.
- 41 **PFITZNER & BECKERS, Vienna—Manufacturers and Patentees.**
Candles, called palmatine candles (made by distilling palm oil).
- 42 **STEARINE CANDLE COMPANY, Hermannstadt, Transylvania.**
Stearine, and stearine candles.
Elaine soda soap.
- 43 **CHIOZZA, CARL ALOIS, & SON, Trieste—Manufacturers.**
A large assortment of soap of different kinds.
[The soap produced at Trieste is made chiefly from olive oil. The annual production of this oil amounts to 90,000 cwt., two-thirds of which are from Dalmatia, one-sixth from Lombardy, one-sixth from Görz, Gradisca, Istria, and Trieste. To this quantity must be added considerable imports from abroad. In the year 1847 they amounted to 234,411 cwt., against which were to be set some very inconsiderable exports. The manufacture of soap from olive oil has decreased considerably of late, and produces at present about 75,000 cwt.]
- 44 **MELZER, DANIEL, Hermannstadt, Transylvania—Manufacturer.**
Soap of different kinds, for bleaching, &c.
Washing soap.
- 44A **RICHTER, ANTON, Königsaal, Bohemia.**
Soap of various kinds.
- 45 **CZEKELIUS, CARL, Hermannstadt, Transylvania—Manufacturer.**
Candles of Transylvanian tallow.
[The production of tallow in the dominions of Austria amounted, on the average of the five years, 1843 to 1847, to 750,000 cwt. By its further manufacture into tallow and stearine candles, soap, &c., the raw material, after deducting from its aggregate the quantity used up in its raw state, attains an increased value of 25 per cent. The production of stearine candles amounts to 20,000 cwt.]
- 45A **BACHRICH, JOHANN, Vienna—Manufacturer.**
Specimens of prepared and unprepared agaric for German tinder. Amadou or German tinder fuses. Medicated agaric for rheumatism, and other similar complaints, and for linings of trousers, comforters, travelling caps, bandages, &c. Agaric styptic for cuts and wounds.
- 46 **FÜRTH, BERNARD, Schüttenhofen and Goldenkron, Bohemia—Manufacturer. (Agent—Julius Lippmann, 29 Nicholas Lane, Lombard Street, London.)**
Patent lucifer matches, of different kinds and forms.
[The manufacture of lucifer matches is constantly increasing. The excellent quality, the peculiar form, the cheapness of price, and the capability evinced by the makers of producing any quantity, have rendered these articles a manufacture of considerable importance. The manufacture affords employment for a great number of workmen, and bids fair to become a lucrative staple of export.]
- 47 **POLLAK, A. M., Vienna—Manufacturer.**
Patent lucifer matches, of different kinds and forms.
- 48 **PRESHEL, F., & Co., Vienna—Manufacturer.**
Patent lucifer matches, of different kinds and forms.
- 49 **HOFFMANN, CARL & GUSTAV, Wisoczan, near Prague, Bohemia—Manufacturer.**
Patent lucifer matches of different kinds and forms.
- 50 **DE MAJO, SAMUEL, Triesch, Moravia—Manufacturer.**
Patent lucifer matches of different kinds and forms.
- 51 **DOLLESCHAL, JOSEPH, Vienna—Patentee.**
Patent tincture, for destroying vermin.
- 52 **WÜRTH, WILHELM EDLER VON, Vienna—Inventor and Patentee.**
Material for stopping decayed teeth.
- 53 **The DIRECTORS of the MINES of His HIGHNESS the PRINCE of LOBKOWITZ, DUKE of RAUDNITZ, Bilin, Bohemia.**
Magnesia and digestive lozenges (pastilles digestives de Bilin). Prepared from the contents of the mineral waters of Bilin.
- 54 **HALLA & Co., Prague—Manufacturers.**
Chemical powder, for making black writing-ink instantaneously.
- 55 **ROBERT & Co., Gross Soelowitz, Moravia—Manufacturers.**
Specimens of beet-root sugar.
[The manufacture of beet-root sugar, only established in Austria in the year 1830, has since widely spread. The establishments have increased, not only in number, but also in extent, in a gratifying manner. The north Slavian Provinces, Bohemia, Moravia, Silesia and Galicia, as well as Hungary, are the principal seats of these important factories.]
- 56 **MANUFACTORY OF THE BROTHERS CHEVALIERS DE NEUWALL, Klobauk, Moravia—Manufacturers.**
Specimens of beet-root sugar.
- 57 **RICHTER, ANTON, & Co., Königsaal, Bohemia—Manufacturers.**
Specimens of beet-root sugar.
- 58 **PRINCE FERDINAND VON LOBKOWITZ, Bilin Bohemia—Manufacturer.**
Specimens of beet-root sugar.
[This branch of industry is divided into the refining of foreign sugars, and the manufacture and refining of sugar and syrup from materials of home growth. The Austrian monarchy can now reckon twenty-three refineries working up foreign sugars, which, in the year 1847, prepared 619,424 cwt. of raw sugar, so as to produce 495,539 cwt. of refined sugar, and 99,105 cwt. of syrup. Of the entire quantity there may be set down to the share of Lower Austria 158,300 cwt.; to the share of Venice 79,000 cwt.; of Carniola 57,000 cwt.; and to that of Lombardy 50,100 cwt. The proportion of sugar and syrup from materials of home growth increases annually in extent and consideration. The home-grown materials which are used in this preparation are prepared beet-root and potatoes; the latter in small quantities only. The number of sugar manufacturers is fifty-nine. Their joint production in 1847 amounted to 157,500 cwt. of raw sugar, for which production 3,148,000 cwt. of beet-root were consumed, and 3,000 cwt. of potatoes. The raw sugar produced furnished 130,000 cwt. of refined sugar, besides 20,000 cwt. of syrup.]

Moravia and Silesia contributed 62,000 cwt. of raw sugar, Bohemia 53,000 cwt., and Galicia 26,000 cwt.; these provinces having the most important share in the manufacture.

It appears that this branch of the national industry of Austria furnishes a production, the value of which, taken altogether, was not less than twenty-six and one-third millions of florins. The quantity of refined sugar produced in Austria almost entirely covered the home demand, as the imports seem to be of little importance. They amounted in 1847 to no more than 4,400 cwt. On the other hand, in spite of the continued increase of the manufacture of sugar from beet-root, the importations of foreign raw sugar were also constantly on the increase.]

59 LARISON-MOENSTICH, COUNT HENRICH, *Karlsbad, Moravia*—Manufacturer.
Sugar-candy manufactured from beet-root sugar.

60 BEET-ROOT SUGAR MANUFACTORY, *Thamara, Galicia*.
Specimens of beet-root sugar.

61 REALI, GIUSEPPE (late Antonio Reali), *Venice*.
Four sugar-loaves.

62 THE PRIVILEGED STEAM FLOUR-MILL COMPANY, *Vienna*.
Flour from Austrian wheat.

[The Austrian monarchy enjoys, by reason of its geographical position, a climate which is especially calculated for the support of animal and vegetable life; in addition to which it is favoured with an excellent soil, so that it is only here and there, in the mountainous districts, that some tracts of territory occur which are not adapted for agricultural cultivation.

The system of agriculture pursued in Lombardy is excellent; it is less so in the Venetian provinces and in South Tyrol. In emulation of Venice and Lombardy, the states of Bohemia and Silesia, of Upper and Lower Austria, and of Salzburg and Styria, have made unquestionable and praiseworthy exertions, although it is beyond question that in the three last-named provinces there occur large districts of dreary waste and desert; but even in the two favoured provinces alluded to there yet remain some difficulties to be overcome. Hungary and Galicia furnish agricultural products far beyond their requirements. Like Bohemia, Moravia and the Lombardo-Venetian provinces are able to export corn and other agricultural productions to other provinces in that neighbourhood, notwithstanding the density of their own population, which varies from 4,800 to 7,200 inhabitants per Austrian square mile; but how far the abolition of vassalage will have a tendency to increase the production cannot at present be at all anticipated. Agricultural labour throughout the monarchy yields in average years an aggregate of 278,000,000 of Lower Austrian "metzen" of grain. Of these 47,000,000 are wheat, 61,000,000 rye, 50,000,000 barley, 8,000,000 oats, 31,000,000 maize, 1,000,000 buckwheat. Of peas, the yield is more than 5,000,000 metzen; of potatoes, more than 100,000,000 metzen; of turnips, about 25,000,000; of hops, about 50,000 cwt.; of butter, cheese, and other dairy produce, about 3,000,000 cwt.

The manufacture of cheese is, especially in Lombardy, very considerable: the production is abundant and of excellent quality. It is an article which proves the staple of a large trade, and, next to silk, is the most important to Lombardy of her products.

The breed of cattle has not yet attained that perfection which it would be so much to the interest of Austrian industry that it should do, and which it really might be

brought up to, when the extremely favourable condition of the soil on which it is reared is considered.]

63 THE PRIVILEGED STEAM FLOUR-MILL, *Flome*.
Different kinds of flour from Hungarian wheat.

64 STEAM FLOUR-MILL, *Smichow, near Prague*.
Different kinds of flour from Austrian wheat.

65 HAWRANEK, CARL, *Troja, near Prague*.
Different kinds of flour from Austrian wheat.

66 NOWOTNY, ANTON, *Prague*.
Different kinds of flour from Austrian wheat.

67 TRUN, COUNT FRANK, *Tetschen, Bohemia*.
Different kinds of flour from Austrian wheat.

68 JORDAN & BARRER, *Tetschen on the Elbe, Bohemia*.
Different kinds of flour from Austrian wheat.

68A RAZUMOVSKY, COUNT LEO VON & FRANK GOTTFRIED RITSCH, *Böhmisck, Budolitz, Moravia*—Inventor.

Grain stone (seilithold) for brewing with cold water by a quick process. This invention is said to be of great importance for shipping, as salt water once distilled can be used; it is also particularly suitable for warm climates. Beer can be made by this method of any strength, and the bitter of the hop is said to be retained for any length of time.

69 IMPERIAL TOBACCO MANUFACTORY, *Vienna*.
Four kinds of snuff, produced in Galicia and Tyrol.

70 CARNIOLIAN AGRICULTURAL SOCIETY, *Laibach*.
Honey, chiefly collected by the bees from the blossoms of buck-wheat.

Winter linseed, from Carniola white and red millet.
Indian corn, grown in Upper Carniola, 400 fathoms above the level of the sea.

[The rearing of bees is carried on most extensively in the Vayvode and the Temeser Banate, Croatia, Slavonia, and Transylvania, on the military frontiers of Galicia, in Lombardy and Venice, and in Styria, likewise in Carinthia and Carniola. In the other provinces this trade is of little consequence or extent. The Germanic, Slavonic, and Italian provinces produce on an average 30,000 cwt. of wax, and the production of the other half of the Austrian empire may be of equal amount. Besides, the imports from abroad were rather greater than the exports, 4,075 cwt. having been in the year 1847 imported, and only 1,814 cwt. exported. The extensive manufacture of wax into candles has been falling off since the introduction of stearine candles, and is now almost limited to those for the use of churches. It has been calculated that wax, by its manufacture into various articles of use and ornament, candles, artificial flowers, &c., receives an increase of 50 per cent. value on the raw material.]

71 CHWALLA, ANTON, *Vienna*—Manufacturer.
Austrian frame of two and three filaments.

72 SCOLA, AUGUST, *Linz, Upper Austria*.
Raw unspun silk.

[Of all the states of Europe, the Austrian monarchy possesses the most abundant supply of silk. The production of silk is conducted on the most important scale in the Lombardo-Venetian kingdom. Next in order of importance comes the Tyrol. The same business is also carried on in the military frontier, Görz and Gradisca, and also in Istria and Trieste, in Dalmatia and the south of Hungary. Trials have likewise been made in Lower Austria, Bohemia, and Carniola. The production of cocoons amounts, on an average, annually—

In Lombardy	to 250,000 cwt.
The Province of Venice	200,000 "
The Tyrol	28,000 "
The other provinces	12,000 "
Total	490,000 cwt.

Or, in round numbers, 500,000 cwt.

The cocoons are prepared at the reeling establishments into raw silk. From the result of inquiries it would appear that Lombardy comprises 3,068 reeling establishments, which employ 79,500 workpeople, without taking into calculation the smaller establishments, which are not included in this enumeration. The entire production amounts to 2,512,000 Vienna lbs.; and, since 12 lbs. of cocoons yield 1 lb. of raw silk, there are required for this aggregate of raw silk 306,400 cwt. of cocoons. The quantity of cocoons required in excess of the quantity produced, an excess of very nearly 50,000 cwt., is covered by the production of the Venetian provinces, chiefly by that of Verona.

Within the province of Venice the reeling establishments are pretty numerous, but of less extent. The nearest approximation to the truth in reference to this matter is obtained by taking the extent of the production at one-half of that in Lombardy. The remainder of the cocoons produced in the province undergo further preparation in Lombardy, and partly in the Tyrol also, whilst a portion of those obtained in Görz and Gradiska, as well as in Istria, are prepared in Venetian reeling establishments.

The number and the performances of the reeling machines in the Tyrol are accurately known. In the year 1848 South Tyrol contained 559 of such reeling establishments. These employed 13,000 hands, and turned out 265,700 lbs. of raw silk, from 31,900 Vienna cwt. of cocoons. The supply of cocoons required, beyond that furnished by the production of the country, was drawn from the Venetian provinces.

The reeling establishments in the remaining provinces produce, conjointly, from 10,000 cwt. of cocoons, 75,000 Vienna lbs. of raw silk.

The whole production of raw silk obtained in the Austrian monarchy is about 4,108,700 lbs. and the waste about 716,400 lbs. The number of working hands employed in the reeling establishments is not less than 160,000 (or if their term of occupation be reduced to 270 days in the year, 30,000 only). Besides the products already enumerated, about 900 cwt. of cocoons are annually imported into Lombardy, principally from Switzerland and the neighbouring Italian States, and are prepared in the Lombard reeling establishments. The quantity of silk produced is thus increased to an aggregate of 4,116,200 lbs.]

73 STIERMARK SILKWORM BREEDING ASSOCIATION,
Gratz, Styria.

Specimens of raw silk; illustration of the treatment of the silkworms.

74 RADLOVITS BROTHERS, *Weiskirchen, Hungary.*
Hungarian silk in skeins.

75 LORENZ, ALOYS, *Weiskirchen, Hungary.*
Raw unspun silk from the Banate.

76 HERZOG, EVA, *Werschetz, Hungary.*
Raw unspun silk from the Banate.

76A KOFLER, FRANZ, HERMANN & CO., *Tyrol.*
Various samples of floss silks.

77 MATTIUSZI, GIOVANNI BATT., *Farmo, Friuli.*
Samples of raw silk.

78 SENIGAGLIA, ISAAC, & CARMINATI, GIOVANNI B.,
Palma, Friuli, Lombardy.
Specimens of raw silk.

79 PAPPAPAVA, —, *Zara, Dalmatia.*
Specimens of Dalmatian raw silk.

80 SCHEIBLER & CO., *Milan*—Producer. (Agents,
J. Stone & Co., 53 Old Broad Street, London.)

1. Six specimens of cocoons; A, yellow, coarse fibre; B, yellow, delicate; C, yellow, satin; D, yellow, saffron; E, white, coarse fibre; F, white, fine fibre. 2. Specimens of raw silk, one thread; raw silk, yellow and white. 3. Specimens of tram silk, three threads. 4. Specimens of organzine silk, for velvet, heavy and light satin and plush. 5. Specimens of grenadine: organzine grenadine, four threads. 6. Two qualities of grenadine manufactures. Looms, Messrs. Brevis Brothers.

[The raw silk undergoes further preparation in the throwing mills, but the whole mass of the production is not thus worked up within the monarchy, for the exports of raw silk are found considerably to exceed the imports. On an average of the five years, 1843 to 1847, the annual imports were 110,000 Vienna lbs. of raw silk (through Venice, Switzerland, and the adjacent Italian States), whilst 700,000 lbs. of this commodity were exported, for the most part to Switzerland, the adjacent states of Italy, and Southern Germany. Hence it results that a balance of raw silk, amounting to 589,000 lbs., have been taken off by foreign consumption, and that the other 3,518,800 Vienna lbs. are retained by the states of the monarchy, and more than two-thirds thereof are worked up in Lombardy. In 1817 that province reckoned 500 throwing-mills, with 1,239,000 spindles; and of these 702,100 were for spinning and 507,200 for twisting. In the throwing-mills themselves 12,000 hands were employed (namely, 4,400 men, 5,500 women, and 2,100 children), and, moreover, there were occupied 31,800 female winders. The production yielded was 989,000 Vienna lbs. of tram, and 1,189,700 lbs. of organzine, making together 2,179,500 Vienna lbs. of thrown silk: for this aggregate of production 2,256,200 lbs. of raw silk were used. The floss silk was to the weight of 76,000 lbs.

The working of the throwing mills of Venice produced, in proportion to those of Lombardy, almost similar results to those above indicated in reference to the reeling establishments; only the production of tram greatly preponderates. The number of persons employed in the throwing-mills, both within and without doors, were 20,000. Their production was above 960,000 Vienna lbs., and the consumption of raw silk by the conversion into this quantity was 1,009,000 lbs., giving waste (floss) to the amount of 47,400 lbs.

There are at present in the Tyrol 55 throwing-mills, with 125,047 spindles; 85,583 of which latter are for spinning and 39,464 for twisting. In these mills 500 men and 1,200 women and children are employed. The production there, including that of the smaller throwing-mills, which give occupation to 500 workmen, amounts to 220,400 Vienna lbs. of thrown silk, for which 231,400 Vienna lbs. of raw silk have to be worked up.

Of the remainder of the raw silk (23,200 lbs.) about 14,000 lbs. are distributed through the other southern provinces, and the remaining 9,200 lbs. appropriated to other purposes.

Thus we find a resulting total of production equal to 3,374,000 Vienna lbs. of thrown silk.

The further conversion of the thrown silk into silk goods is still confined almost exclusively to Vienna, Milan, and Como, whilst its working up into mixed stuffs has attained considerable extension. By far the greater portion of the thrown silk is, therefore, exported to foreign markets. From 1843 to 1847 these exports showed an annual average of 1,984,900 lbs. of thrown silk, of 142,700 lbs. of cleaned and dyed silk; so that there remained for home consumption about one-third of the entire production, or 1,296,300 lbs., because the imports were very inconsiderable.

More than one-half of this quantity is worked up in Vienna, and its manufacture, including the dyeing process, represents a very large capital. The consumption of silk in Vienna increases from year to year.

Milan may be classed immediately after Vienna, with reference to the value of its productions in this class. It appears that the cultivation and manufacture of silk in Austria show a gross resulting total of value of 59,000,000 of florins; and that they employ more than 800,000 persons, some for the whole year, some for shorter intervals, if the breeding of silkworms be also included. Of what importance to Austria the production of silk and silk goods must be is evident from the course of the trade in these articles, which occupy the highest place among the objects of Austrian commerce.]

81 SECOHI, FRANCESCO, *Milan*.

Samples of raw silk spun off with cold water.

82 RONCHETTI, PIETRO ANT., *Milan*—Manufacturer.
Samples of raw and spun silk.

83 GRASSI, DR. GIUSEPPE, *Milan*.
Diseased silkworms, cured by the exhibitor's method.

84 QUERINI, GIOVANNI, *Venice*.
Samples of raw silk.

85 PARI, GERA DI, *Canegliano, Province of Treviso*.
Samples of raw silk.

86 CANOSSA, MARCHIONESS ELEONORA, *née MUSELLI, Verona*—Producer.
Samples of raw silk.

87 STEINER, G., & SONS, *Bergamo*—Manufacturers.
Samples of raw and spun silk.

87A VERZA BROTHERS (late Carlo Verza), *Milan*.
Cocoons, raw and spun silk, silk fabrics.

88 ROSSI, GIOVANNI MARIA, *Sondrio*.
Samples of raw and spun silk.

89 HUNYADY, VON KITHELEY, COUNT JOSEPH,
Űrmény, Hungary—Proprietor.
Sheep-wool in fleeces.

90 FIGDOR, ISAAC, & SONS, *Vienna*—Merchants.
Hungarian and Austrian-Silesian sheep and lambs' wool.

[The manufacture of woollen goods constitutes an important branch of Austrian industry. It is of so much the greater importance, as it works up a raw material raised and supplied by Austria herself, in which, besides, she carries on a considerable trade, and which, being a native product, is not subject to the fluctuations that the supply of a raw material derived from foreign countries is always liable to.

The average production of wool in Austria amounts annually to about 700,000 cwt. Of this quantity about one-third (produced in Moravia, Silesia, and Bohemia, in part also from Galicia, Hungary, and Upper and Lower Austria) is of fine quality: one-half (drawn from

Galicia, Hungary, and partly likewise from Transylvania) is of middling quality; the remainder, of an inferior sort, is grown in Hungary, Transylvania, and the southern provinces. To this estimate must be added a quantity of inferior kinds, which generally is of much about the same amount, imported chiefly from Turkey and the Danubian principalities: these imports amounted, on an average of the five years 1843 to 1847 (the years 1848 and 1849 having been years out of the usual course and condition, are not noticed here), to 57,000 cwt. annually; whilst the annual exports during the same period averaged 123,700 cwt. About 637,000 cwt. of wool remained, therefore, to be manufactured by Austrian industry.]

91 VON MITTROWSKY, COUNT ANTON, *Grossherrlitz, Silesia*—Proprietor.
Pure stock merino sheep-wool.

92 LARISCH-MÖNNICH, COUNT HEINRICH, *Karwin, Silesia*—Proprietor.
Sheep-wool in fleeces.

93 WALLIS, OLIVIER, COUNT VON, *Kolleschowitz, Bohemia*—Proprietor.
Washed and unwashed wool.
Bohemian hops.

94 PANNA, N., & ALEXIS, J., *Cronstadt, Transylvania*.
Washed and unwashed Transylvania Zackel-sheep and lambs'-wool, and washed and unwashed Transylvania Zigaja-sheep and lambs'-wool.

95 BIRNBAUM, JACOB, *Pesth, Hungary*—Manufacturer.
Prepared Hungarian hemp for various purposes.

95A PRIVILEGED LINEN YARN SPINNING MILL,
Schönberg, Moravia.
Raw flax, heckled flax, and flax made therefrom.

96 PATENT FLAX RAITING ESTABLISHMENT,
Ullersdorf, near Schönberg, Moravia.
Raw and heckled flax of the year 1850.

[The average production of flax within the monarchy amounts, exclusive of the growth of Hungary, the Vayvode, the Temeser Banate, Croatia, and Slavonia, as well as Transylvania, to 813,700 cwt., and that of hemp to 725,400 cwt. Of Hungary and Transylvania the annual production of flax is reckoned at 380,000 cwt., and of hemp at 500,000 cwt. The average crops, both as to flax and to hemp, may be taken as 1,200,000 cwt. of each. Of the flax, the distribution is to Galicia, 256,100 cwt.; to Bohemia, 178,800 cwt.; to Lombardy, 111,200 cwt.; to Moravia and Silesia, 64,200 cwt.; and to the Tyrol, 50,000 cwt. Of the hemp, to Galicia, 494,900 cwt.; to the Province of Venice, 59,600 cwt.; and to the Military Frontier, 57,150 cwt. They furnish 360,000 cwt. of clean flax, and 600,000 cwt. of tow, of clean hemp 360,000 cwt., with 480,000 cwt. of tow. These quantities, which ultimately undergo further manufacture, are, as to flax, scarcely at all affected by the course of trade with foreign countries; for, during the quinquennial period, 1843 to 1847, the average imports amounted to 15,900 cwt., and the exports to 19,400 cwt. Hemp, on the other hand, derives a considerable increase of quantity from the excess of the imports from abroad. During the same interval there were annually imported, on an average, 100,900 cwt., whilst only 34,700 cwt. were exported.]

97 TOMASSIA, LUIGI, *Poggio, Lombardy*—Manufacturer.
Willow-straw for hats.

98 ROTSCH & REICHEL, *Gratz, Styria*.
Styrian teazles, for the woollen manufacture.

- 99 **SCHÖFFL, JOSEPH, Saaz, Bohemia**—Producer.
Hops from Saas, Ansch, and Melnik, in Bohemia.
- 100 **BATKA, WENZEL, Prague, Bohemia**—Manufacturer.
Bohemian vegetable produce.
Medical plants and pharmaceutical productions.
- 101 **REALI, GIUSEPPE (late Antonio Reali), Venice.**
Bleached Venetian wax in grains.
- 102 **MALVIEUX, C. J., Pesth, Hungary**—Manufacturer.
Refined and unrefined rape-oil.
- 103 **STEINBÖCK, A., St. Georgen, near Mauthausen, Upper Austria; Agent, No. 5 Denmark Street, Soho.**
Specimens of linseed oil, varnish, and Austrian and Moravian linseed.
- 105 **SCHMID, H. D., Vienna**—Manufacturer.
Steam-engine, with a paraboloidic regulator of new invention.
Model of a patent scale-beam.
Designs for beet-root sugar factories.
[The manufacture of machinery has only very recently become a part of Austrian industry, and already promises well. The superior quality of the raw material of the country affords to this branch most important advantages. Prime-movers, steam-engines, and locomotives are produced of excellent quality. Various circumstances, particularly the enormous freight, prevented the transmission of extensive contributions to the London Exhibition from this department.
The rapidly-increasing demand for machines, in consequence of the general development of Austrian industry, and the progress of railway constructions and of steam navigation, has of late years called into existence the business of the wholesale manufacture of machines. But this newly-created manufacture had to contend, at its outset, with great difficulties. The natural consequence has been, that engine builders have not yet reached that perfection which is to be desired, although they are already able to compete with foreign makers in some of the main or principal articles of their trade, and can now furnish steam-engines, machinery for direct use, planing-machines, grooving tools, spinning-mules, mills, cranes, spindles, pumps, &c. The larger steam-engines (which are coming into extensive use) are imported from abroad in a smaller number every year. For example, of the 136 steam-engines of 6,839-horse power, which was the number registered in 1846, 98 of 4,559-horse power in all were manufactured at home. At the close of the year 1846, 760 steam-engines, representing 24,734-horse power, were in work in the German, Slavonic, and Italian provinces, but the number has since considerably increased. Notwithstanding the improvement that has been made in this branch of industry, the importation of machines and parts of machines from year to year has gradually progressed.]
- 106 **MILESI, ANGELO, Verona**—Engineer.
Model of a double condensation steam-engine. Has been erected in Verona, in full size, and is in use.
- 106A **OLDRINI, JOHANN, Vienna.**
Model of an indigo mill. Model of an apparatus for printing yarn, &c., before weaving.
- 107 **KNIERIM, FERDINAND, Vienna.**
A carriage.
[The manufacture of carriages of different kinds is carried on in Vienna, Prague, Gratz, Milan, and also in several smaller places in Moravia and Bohemia.
- Vienna furnishes very tasteful, serviceable, and cheap carriages of all kinds. The export of them to foreign parts is very considerable, and the already large manufacture is daily extending.
The Vienna carriage is characterised by its easy draught, elegant form, and the durability of its upholstery work, &c.]
- 108 **LAUBENZI, LUDWIG, Vienna**—Coachmaker.
A four-seated calèche, on nine steel springs and patent axles.
- 109 **THE HEIRS OF P. GAMBA, Milan**—Manufacturers.
A Jacquard loom.
- 110 **RIDLER, FERDINAND, Spital-on-the-Pyhrn, Upper Austria**—Steel-worker.
Damascene steel.
Damascened swords and sword-blades.
- 111 **PERGER, J., Gratz, Styria**—Manufacturer.
A pair of pistols.
- 112 **MEYER & Co., Innsbruck, Tyrol**—Manufacturers.
A Tyrolese rifle; exhibited for its superior qualities and cheapness.
- 113 **SCHÖNHUBER, JOSEF, Villach, Upper Carinthia**—Manufacturer.
A bolt rifle, propelling the bolt by means of a spring, on a new construction.
- 114 **LEBEDA, A. V., Prague**—Manufacturer.
A double-barrelled gun.
A Tyrolese rifle.
A pistol for target shooting.
- 115 **NOWAK, FRANZ, Prague**—Manufacturer.
A double-barrelled gun.
A pair of target pistols.
- 116 **KEHLNER'S NEPHEW, A. CH., Prague**—Manufacturer.
A pair of pistols for shooting at a target. The wood carvings by Mr. Worlinek, after drawings by Messrs. Marx and Sciberts.
- 117 **PREIS, ANTON, Prague**—Manufacturer.
An assortment of weapons, hangers, &c.
- 118 **SCHAMAL, FRANZ, Prague**—Manufacturer.
An air-pistol.
- 119 **MICHELONI, GIOVANNI, Milan**—Manufacturer.
Double-barrelled fowling-piece.
- 120 **BUBENITSCHEK, JOSEPH, Hermannstadt, Transylvania**—Manufacturer.
A travelling-pouch, containing a hunting-knife, a pistol, knives and forks.
- 121 **KIRNER, J., Pesth, Hungary**—Manufacturer.
A double gun.
- 122 **SELLIER & BELLOT, Prague**—Manufacturers.
(Agents, B. A. Grautoff & Co., 4 Lime Street Square, London.)
Patent percussion caps. The total manufacture of percussion-caps for sporting guns in Europe may be estimated at 1,300 millions yearly. Some idea of the importance of this article may be formed from the quantity of copper requisite for its production, viz., 396,000 lbs. weight. The great advantages of the percussion principle have been so generally acknowledged that within the short space of 20 years all kinds of guns with flint-locks have been abandoned, and the percussion system has likewise been extended to muskets for the army. The percussion-caps exhibited are stated to be remarkable for accuracy and equality of bore, for the malleability of the copper, and superior quality of the powder. The percussion-caps coated with varnish exhibited may remain in water

for 72 hours and more without losing their power of immediately igniting the powder.

Nipples (pistons) hermetically closed, a new invention, which prevents any moisture from penetrating between the percussion-caps and the nipple, and thus preserves the sportsman's powder perfectly dry.

Specimens of iron cylinders coated with cast-steel of superior hardness and solidity.

122A DIEZ, ERNST, *Villach, Carinthia*.
Shot and bullets.

123 HORSKY, FRANZ, *Libiegnitz, Bohemia*—Patentee and Inventor.

A seed-harrow, a potato-cultivator, a drilling-machine, a turnip and weed eradicator, &c., the inventions of the exhibitor; manufactured at the iron-works of Count Stadion, at Josephthal, Bohemia. Provisionally registered.

124 LOKKOWITZ, PRINCE FERDINAND VON, *Eisenberg, Bohemia*—Manufactory of Agricultural Implements.

A seed-harrow. A double-marker.

A seed-coverer. A seed-loosener.

A weed-destroyer. A sub-soil plough.

The inventions of the Chevalier von Infeld, of Eisenberg, manager of the works.

125 RIESE-STALLBURG, BARON WERNER FRIEDRICH VON, *Schlan, Bohemia*—Proprietor.

A carrot-driller.

126 MAGNI, GIOACCHINO, *Milan*—Proprietor.
An iron harrow.

127 PAJK, GEORG, Carpenter for the Carniola Agricultural Society, *Laiabach*.

Model of a Carniolian granary.

Model of a Carniolian bee-hive.

128 HOEFFNER, JOSEF, *Grottenhof, Styria*—Proprietor.
Model of a stand for cocoons.

129 PROKSCH, ANTON, *Görkau, Bohemia*—Inventor.
A knapsack, &c., of convenient construction.

130 MECHANICAL DEPARTMENT OF THE IMPERIAL POLYTECHNIC INSTITUTE, *Vienna*.

1. A universal Y level, telescope 15 lines aperture, and 20 times magnifying power, horizontal limb, with two verniers from 30 to 30 seconds; altitude circle, with verniers divided in single minutes on silver; micrometer screw, with divided head for measuring distance and altitude. Patented by Stampfer and Starke; in polished case.

2. A Y level, an instrument for measuring distance and altitude; patented by Stampfer and Starke; telescope 13 lines aperture, 15 times magnifying power, the eye-piece with machinery for accurate adjustment; limb divided by the vernier to single minutes on silver; horizontal clamping and horizontal adjustment, &c. In polished case, with lock and handle.

3. A level with fixed telescope, 16 lines aperture, 12 times magnifying power; limb divided at every minute on silver; horizontal clamping and horizontal slow motion. In polished case.

4. A level with fixed telescope, 11 lines aperture, 12 times magnifying power, eye-piece with machinery for accurate adjustment; oblique limb divided at every minute on silver; arrangement for measuring distance, &c., as above. In polished case.

5. A level without limb; telescope 11 lines aperture, 12 times magnifying power. In polished case.

6. A pocket level, weighing 10½ ounces, with telescope 6 times magnifying power.

7. A pocket levelling dioptric, with telescope without magnifying power.

8. A telescope lineal of novel construction, made very light, only weighing 1½ lb. In polished case.

9. A telescope lineal, patented by Stampfer and Starke. In polished case.

10. A universal level (theodolite) for mines; rectangular telescope, 11 lines aperture; horizontal and vertical limb, divided on silver by verniers from 30 to 30 seconds; arrangement for measuring distance and altitude, striding spirit level, &c. In case.

A dynamograph, for ascertaining the average strength of draught. Invented by Adam Chevalier de Burg, director of the Imperial Polytechnic Institute, Vienna.

[Mathematical instruments of good quality and at low prices are mostly made in Vienna, by a number of small working tradesmen, for the supply of the monarchy. A few specimens of the larger surveying instruments are, however, exhibited.

Optical instruments are likewise produced principally in Vienna, of superior quality, particularly those which serve more for purposes of general utility than for science. Opera-glasses and similar articles of the utmost excellence, as well as spectacles and eye-glasses, of all descriptions and mountings, are made in Vienna by a great number of tradesmen. The glasses come mostly from Bohemian manufactories, but are cut in Vienna. No sample of this department has been sent.

Of the philosophical instruments, only a few specimens have been forwarded.]

131 RIEDL, VON LEUENSTEIN, J., *Vienna*—Inventor.
Globe of the moon.

132 ZIBERMAYR, M., *Gratz, Styria*—Inventor.
Chronoglobium and planetarium.

133 BRANDEIS, R. W., *Prague*—Manufacturer.
Saccharometrical apparatus for trying beer, designed by Mr. C. J. N. Balling, Professor of Chemistry, of Prague.

134 JERAK, FRANZ, *Prague*—Manufacturer.
Philosophical, chemical, and medical apparatus and instruments.

Works of art in glass.

135 BATKA, WENZEL, *Prague*—Manufacturer.
Chemical and philosophical apparatus.
An electro-magnetic apparatus, by Prof. Petrina, Prague.
An apparatus for trying beer, after the design of Dr. Steinheil, of Vienna.

136 ROCCHETTI, PAOLO, *Padua*—Engineer.
Geometrical instruments.

137 WURM, FRANZ XAVER, *Vienna*—Engineer
Pyrometer for discovering the degree of heat: a new invention.

Patent furnace bar, new invention. Provisionally registered.

Artificial feet and arms.

Iron-wire rope.

138 ZWICKL, JOSEPH, *Atzgersdorf, near Vienna*
—Manufacturer.

An instrument for measuring concave surfaces.

139 MARCHESI, GIO. B., *Lodi*—Inventor.

A writing machine for the blind, producing the letters either black or in relief.

140 SCHNEIDER, JOSEPH, *Vienna*—Manufacturer.

Grand pianoforte of American maple, 7 octaves, with Viennese mechanism, ornamented with inlaid-work.

[The excellence and extent of the musical department in Austria are the natural consequences of the fondness of its inhabitants for music, and the extensive demand for musical instruments resulting therefrom.

Vienna and Prague are the principal seats of the manufacture of stringed and wind instruments, which are celebrated for purity of tone and cheapness, and are consequently articles of considerable export. Also in other parts of Bohemia and the Archduchy of Austria, and in Lombardy, excellent musical instruments are made.

The Vienna pianoforte is considered to possess a full and beautiful tone, easy touch, elegant and light shape. The manufacturers endeavoured to adapt the mechanism of the instruments to the taste of the various countries. The few specimens in the Exhibition deserve attention, also for the tasteful cabinet-work of the cases.

Besides Vienna, at Prague, Gratz, Presburg, and other places in Austria, pianofortes of equally good quality are manufactured.

Harmonicons, both large and small, the latter of which are rather to be considered as toys, are extensively made in Vienna of good quality, and are largely exported. Musical boxes from Prague are also exported in large quantities.]

- 141 VLASKY, JOHANN, *Prague*—Manufacturer.
A pianoforte, 7 octaves, of walnut-tree wood.
- 141A POTTJE, J., *Vienna*—Manufacturer.
Grand pianoforte of rosewood, with carved ornaments, seven octaves; Vienna mechanism.
- 141B SHUFFERT, E., *Vienna*—Manufacturer.
Piccolo pianoforte of rosewood, with buhl-work and transposition mechanism, from designs of the architect, Bernardo de Bernardis, in Vienna. The bronze ornaments by A. Hollenbach, Vienna.
- 141C HOXA, F., *Vienna*—Manufacturer.
Grand pianoforte, seven octaves, with brass string-plate, and the strings attached to separate iron tongues; the case of Hungarian poplar.
- 141D DEUTSCHMANN, J., *Vienna*—Manufacturer.
A melodium.
- 142 WILHELM, ANTON, *Mödling, near Vienna*—Manufacturer.
Leather for covering the hammers of pianofortes.
- 143 BIENERT, D., & SON, *Maderhäuser, Bohemia*—Manufacturers. (Agent, Mr. Holste, 76 Basinghall Street, London.)
Different kinds of prepared wood for musical instruments.
- 144 BITTNER, DAVID, *Vienna*—Manufacturer.
A stringed quartett (two violins, tenor, and violoncello). A violin, a bass-viol, and a guitar.
- 145 KOSSELT, JOHANN, *Turnau, Bohemia*—Manufacturer.
A violoncello, inlaid with mother-of-pearl.
- 146 HERZLIEB, F., *Gratz, Styria*—Manufacturer.
A stringed quartett (two violins, tenor, and violoncello).
- 147 CERUTI, ENRICO, *Cremona*—Manufacturer.
A violin.
- 148 KIENDL, ANTON, *Vienna*—Manufacturer.
Two citherns (stringed instruments).
- 149 HUTHER, MICHAEL, *Vienna*—Manufacturer.
A cithern (a stringed instrument).
- 150 CALLEGARI, ANTONIO (firm of Antonio Prial detto Romanin & Co.), *Padua*—Manufacturer.
An assortment of strings for musical instruments, including violin, violoncello, double bass, harps, &c., and specimens of cat-gut.
- 151 INDRI, ANTONIO, *Venice*—Manufacturer.
Samples of strings for guitar, violin, violoncello, harp, and double bass.
- 152 HELL, FERDINAND, *Vienna*—Manufacturer.
Musical instruments: a clarinet, cornet-à-pistons, bugle, bass-tuba, trumpet, euphonion horn, and a bass instrument, a new invention, called Hell's horn.
- 152A THEISZ, S., *Hermannstadt, Transylvania*—Manufacturer.
A French horn and fife.
- 153 RIEDL'S WIDOW, J. F., *Vienna*—Manufacturer.
Various wind instruments of metal.
- 154 STEHLE, JOHANN, *Vienna*—Manufacturer.
Harmonic bass (a new instrument) and a bassoon.
- 155 UHLMANN, JOSEPH, *Vienna*—Manufacturer.
Various wind instruments of wood and metal.
- 156 ZIEGLER, JOHANN, *Vienna*—Manufacturer.
Flutes and clarinet.
- 157 CERVENY, W. F., *Königgrätz, Bohemia*—Patentee.
Various wind instruments of metal; among them a new phonikon horn, called Zevuhoroh.
- 158 ROTT, A. H., *Prague*—Manufacturer.
Various wind instruments of metal.
- 159 ROTT, VINCENZ, JOSEF, *Prague*—Manufacturer.
Various wind and stringed instruments.
- 160 STÖHR, FRANZ, *Prague*—Manufacturer.
Wind instruments: euphonion and bugle.
- 161 PELITTI, GIUSEPPE, *Milan*—Manufacturer.
Wind instruments of metal, of novel construction.
- 162 RZEBITSCHKEK, F., *Prague*—Manufacturer.
Four musical-boxes, playing two, three, four, and six tunes.
- 163 REINISCH, JOSEPH, *Vienna*—Manufacturer.
Different kinds of harmonicons and mouth-organs.
- 164 STEINKELLNER, C., *Vienna*—Manufacturer.
Different kinds of accordions.
- 164A LAUDACHER, FRANZ, *Linz, Upper Austria*.
Church clock.
- 165 LISZT, ANTON, *Vienna*.
Two travelling clocks.
[Vienna, Prague, and Gratz are the principal seats of this industry. In the former place particularly, the construction of clocks is carried on extensively by a numerous class of small manufacturers. The Vienna clocks in glazed wooden cases, the metal clocks called Black Forest, or Schwarzwälder, clocks, and the small clocks (Nippuhren) on bronze or porcelain stands, and under glass shades, have become considerable export articles—the former on account of their excellence, the latter owing to their appearance and cheapness.
Church clocks, astronomical clocks, travelling clocks, and also watches, are of superior workmanship.]
- 166 MARENZELLER, IGNAZ, *Vienna*—Clockmaker.
A chronometer of novel construction.
- 167 RATZENHOFER, J. F., *Vienna*—Clockmaker.
A geographical clock, showing the difference of mean time in all the capitals of Europe, from a design by B. di Bernardis.

168 SCHUBERT, ANTON, *Vienna*—Clockmaker.
Different kinds of clocks; including bracket, table, and small toilet clocks.

169 KRÁLIK, S., *Pesth, Hungary*—Clockmaker.
A travelling clock with 13 escapements.
A gold cylinder watch.

170 ZELISKO, AUGUST, *Prague*—Clockmaker.
A pendulum clock, going a twelvemonth, jewelled socket and escapement.

170A ANDERWALT, PASQUALE, *Trieste and 5 Fine Street, Regent Street*—Manufacturer.

Three pendulum clocks, Nos. 1 and 2, moved by the disengagement of hydrogen gas, which renews, at stated times, their winding up. No. 1 will go for 30 years, and No. 2 for 20 years, without ever requiring to be wound up. They may be wound up for a century, without alteration in dimensions or form. No. 3, a barometrical clock, constantly winds itself up by the pressure of the atmosphere on quicksilver. Provisionally registered.

171 CHIACHICH, MICHAEL, *Fiume*—Spinner.
Specimens of cotton yarn.

[Cotton-spinning and weaving have of late years been greatly on the increase in Austria, owing to the demand for home consumption. Bohemia, Lower Austria, and Vorarlberg, in the Tyrol, contain most of the spinning-mills; Bohemia has by far the greatest number of establishments for weaving and printing. The erection of power-looms has not been extensive, the greatest part of the articles produced being woven by hand by the inhabitants of the Bohemian mountain-frontier districts. The production of cotton yarn and goods has increased of late years in a measure which bears no proportion to the small number of the samples exhibited.]

172 GRILLMAYER, JOHANN, *Linz, Upper Austria*—Spinner.
Specimens of cotton yarn.

173 HIRSCHL & MINERBI, *Haidenschaft, Illyria*.
White cotton warp yarn.
Red-dyed cotton mule yarn.

173A LENSSEN, JULIUS, *Tischowitz, Bohemia*—
Red cotton yarn.

174 PERGER, JOSEF, *Hirtenberg*—Spinner.
Cotton yarn in various stages of manufacture.

175 PORDENONE COTTON MILL AND DYEING ESTABLISHMENT, *near Venice*.
Samples of cotton twist, dyed Turkey red.

176 RICHTER, FRANZ, *Smichow, near Prague, Bohemia*—Spinner.
Yarn spun from Mobile cotton.

[The cotton manufacture gives employment the whole year round to hundreds of thousands of individuals; but no other branch is subject to such fluctuations, and these are occasioned, in the first place, by the necessity for drawing the supply of the raw material from abroad. The rapid development of the cotton manufacture is shown in the clearest manner by the quantities imported at given periods. On an average of the five years, 1843 to 1847, they had increased to 403,100 cwt. In the year 1846 they had reached 447,300 cwt., and had thus within 18 years increased sevenfold. The exports of cotton were unimportant, amounting on an average to about 1,700 cwt. only a year: so that the whole quantity imported may be considered as entering for manufacture into the home consumption of the Austrian monarchy.

The first process in the preparation of the cotton takes place in the spinning-mills. In the year 1847 the Austrian monarchy contained 206 spinning-mills, with 6,125 spinning machines, and 1,421,986 spindles. These, however, are very unequally distributed over the several provinces. The greatest number of spindles was possessed by Lower Austria, which could reckon 528,916, most of them in the neighbourhood of Vienna, and by Bohemia which had 448,368. Next in order was the Tyrol, which could count 195,410 (these almost exclusively in the Vorarlberg), then Lombardy, with 104,473 spindles, and Upper Austria with 64,489. In the other provinces, spinning mills occur but sparingly, here and there.

The entire stock of cotton of all these mills was, at the beginning of 1849, about 52,659 cwt., and they supplied themselves in the course of that year, to the further extent of 499,012 cwt. Their total production for the same year, of cotton yarn and twist, was 397,240 cwt.

There were employed directly in the spinning mills nearly 30,000 workpeople; but the number indirectly employed being large, this amount is thereby raised to about 50,000 hands.]

176A DIERZERS' HEIRS, JOHANN, *Theresenthal, near Gmunden, Upper Austria*.
Specimens of cotton yarn.

177 FRÖHLICH'S SONS, G. A., *Warnsdorf, Bohemia*—Manufacturers.
Cotton velvet of different kinds, dyed and printed. White flannel.

178 GROHMANN, CARL, *Lindenau, Bohemia*—Manufacturer.
Cotton yarn, dyed Turkey red and pink.
Cotton velvet and calico, dyed Turkey red.

179 LANGE, FRANZ, & SONS, *St. Georgenthal, Bohemia*—Manufacturers.
Cotton velvets of different kinds.

180 WINTER, JOSEPH, *Vienna*—Manufacturer.
Quilted bed-covers.

181 EHINGER, ALBERT, *Oberlangenau, near Hohenelbe, Bohemia*—Manufacturer and Bleacher.
Various cotton goods. Jaconets, handkerchiefs, &c.

182 FRIEDRICH, ANDREAS, *Vienna*—Manufacturer.
Various cotton goods, shirtings, muslins, thibets, &c.

[In addition to the yarn of Austrian production, considerable quantities of the finest yarns are annually imported from abroad. In the five years, from 1843 to 1847, there were imported annually 41,787 cwt., whereas no more than 1,464 cwt. were exported annually during the same interval.

The weaving, in by far the greatest proportion, pertains to the domestic industry of the monarchy, the number of the more extensive establishments being very small. It is followed most extensively in Bohemia, where it employs 180,000 people. Moravia and Silesia come next with regard to the extent to which this occupation is followed, although but one single cotton spinning-mill exists in them (and that only since 1848): in these provinces 40,000 persons earn a subsistence by weaving. In Lower Austria, and especially in Vienna, mixed stuffs particularly are manufactured, and this is, to some extent, the case in Upper Austria also. In Styria, Illyria, Galicia, and in the province of Venice, the cotton manufacture is but inconsiderable. In the Tyrol (the Vorarlberg) the yarn produced is not worked, but is principally sent to Lombardy, Bohemia, Moravia, and Austria. The cotton weaving of Lombardy is of more importance,

although at present, with the exception of the mixed stuffs, an ordinary fabric only is produced there. In Dalmatia and in the Military Frontier this branch of industry can scarcely be said to be carried on at all; and Hungary, together with the Vayvode and the Temeser Banate, Transylvania, Croatia, and Slavonia, produce but common stuffs, for which the neighbouring Austrian provinces furnish the principal supply of yarn; for the averages of the five years last referred to show that 14,728 cwt. of yarn were exported thither, whereas the imports from thence amounted only to 594 cwt. The number of hands engaged in the occupation of cotton-weaving amounts to 300,000.]

183 JENNY & SCHINDLER, *Hard, Vorarlberg*—
Manufacturers.

Furnitures. Cloths.
Ladies' dresses (all wool).
Ladies' and children's scarfs.

184 KLAMER, JOHANN, *Vienna*—Manufacturer.

Ladies' muslin dresses, plain and embroidered; striped cotton, and muslin handkerchiefs.

185 LANG, JOHANN, *Vienna*—Manufacturer.

Specimens of fine cambric muslin.

186 LEITENBERGER, EDUARD, *Reichstadt, Bohemia*—
Manufacturer.

Plain and assorted coloured cotton prints, printed by cylinder and hand.

Jaconets, cambrics, muslins of different colours.

187 LEITENBERGER, FRANZ, *Cosmanos, Bohemia*—
Manufacturer.

Plain and variously-coloured cotton prints, printed by cylinder, hand, or perrotine.

Coloured jaconets, cambrics, muslins, and printed shirtings.

188 LIEBISCH, JOHANN, *Warnsdorf, Bohemia*—
Manufacturer.

Quilting for waistcoats.

189 OSSBERGER'S SUCCESSOR, PETER, *Markt Zwell, Lower Austria*—Manufacturer.

Samples of cotton goods, various colours, glazed.

190 VOLKMAN, IGNAZ, *Vienna*—Manufacturer.

Ladies' fancy cotton dresses.
Specimen of Ajor curtain.

191 KELLER, JOSEF, *Brünn, Moravia*—Spinner.

Twelve specimens of woollen yarns.

192 LEIDENFROST, EDUARD, *Brünn, Moravia*—Spinner.

Woollen yarns of various colours.

193 SCHMIEGER, ANTON, *Neudeck, Bohemia*—
Manufacturer and Spinner.

Worsted and woollen yarns.
Woollen fabrics, including thibets, muslin, cloth, &c.

194 SOXLEIT, H. F. & E., *Brünn, Moravia*—Spinners.

Woollen yarns.

195 TETZNER, GUSTAV, *Görkau, near Comotau, Bohemia*—
Spinner.

Woollen yarns.
Vigogna yarns, spun of wool and cotton.

196 THOMAS, LEOPOLD, *Graslitz, Bohemia*—Manufac-
turer.

Worsted and woollen yarn.
Woollen stuffs: Thibet, ladies' cloth, lama, half-wool tartans.

[The production of wool and woollens is a most important branch of industry, and its export trade is only exceeded by that of silk goods. The raw material of

which, besides a large quantity exported, is entirely of home growth. Nearly half the wool of Austria is Hungarian; next in importance are Bohemia, Galicia, Moravia, Silesia, Transylvania, Upper and Lower Austria. The woollen yarns are usually spun in the cloth manufactories, and several spinning-mills have been lately established.

The shawls, which are manufactured almost exclusively at Vienna, combine durability and tastefulness with cheapness, and have long been extensive export articles.

Some specimens of woollens mixed with cotton, silk, and thread, as well as carpets and similar articles, are exhibited.]

196A DIERZEE'S HEIRS, JOHANN, *Theresienthal, near Gmunden, Upper Austria*.

Worsted yarn.

197 THUM, ANTON, *Reichenberg, Bohemia*—
Manufacturer.

Worsted and woollen yarns.

Woollen goods, including Thibets, Circassia, Orleans, and waistcoats.

Printed cashmere and Circassia shawls.

[The woollen manufacture is most extensively diffused, and the raw material receives its greatest increase in value in Silesia, where 230,000 cwt., in Bohemia, where 150,000 cwt., and in Lower Austria, where 40,000 cwt. are annually worked up. With less enhancement of value wool finds a considerable consumption in Hungary, amounting, together with that of the Vayvode, the Temeser Banate, Croatia, and Slavonia, to 100,000 cwt.; also in Transylvania which takes 40,000 cwt., and on the Military Frontier, which absorbs 20,000 cwt. In the other provinces of the empire the manufacture is carried on upon a smaller scale, their consumption being about equal to their production; but Galicia and the Bukovina constitute an exception to this remark, for these scarcely work up one-tenth part of their production of the raw material; and, with regard to its enhancement in value, they will probably stand between the first-named province and Hungary (excepting, however, Dalmatia, which furnishes only the commonest articles). Among the particular towns, Reichenberg, Brünn, Vienna, Iglau, and Bielitz stand in the first class of producers of woollen goods. Vienna manufactures scarcely any cloths, whereas in the other localities both cloths and other woollen goods are extensively made.

The manufacture of worsted yarns is not adequate to supply the requirements of the monarchy. It is most considerable in Bohemia. Altogether about 10,000 cwt. of worsted yarn are wound off 30,000 spindles from 25,000 cwt. of wool. The imports of worsted yarn are almost exclusively furnished from Saxony and brought into Bohemia; on an average of the same quinquennial period last referred to, they amounted to 12,900 cwt.

Thus there remained for woollen yarn and hand spinning about 600,000 cwt. of raw material. Of this quantity something more than the half, or about 350,000 cwt. were spun, for the most part in Moravia, Silesia, Bohemia, and Lower Austria, by machinery on 550,000 spindles into 250,000 cwt. of yarn; the remainder, representing a value of 18 millions of florins, is hand-spun.]

198 VÖSLAU WORSTED YARN SPINNING COMPANY,
Vöslau, near Vienna.

Berlin wool, worsted yarns, and arras yarns.

199 KAMNER, GEORGE T., *Cronstadt, Transylvania*—
Weaver.

White sheep's wool and blue striped rugs.
Black and white cloths (called Gujoratz cloth).

- 266 MAYER BROTHERS, *Vienna*—Manufacturers.
Silk, velvet, and other waistcoatings.
Satin scarfs, neckcloths, and handkerchiefs.
- 267 MESTROZI, PAUL, *Vienna*—Manufacturer.
Ladies' silk handkerchiefs.
Satin and velvet waistcoatings.
- 268 REICHERT, FRANZ, *Vienna*—Manufacturer.
Silks. Gros de Naples; gros grain; gros d'Afrique;
Levantin and satin Turque.
- 269 SCHIFFER, CARL, *Vienna*—Manufacturer.
Silk plush for hats.
- 270 SCHOPPER, M. A., *Vienna*—Manufacturer.
An extensive selection of silk for furniture, in brocades,
lampas, satins, and damasks.
Carriage linings.
- 271 SIEBERT, FRIEDRICH, *Vienna*—Manufacturer and
Patentee.
Chenille handkerchiefs and bayaderes.
- 272 SIGMUND, IGNAZ, *Vienna*—Manufacturer.
Silk lawn; transparent gauze; and bayaderes.
- 273 SPANRAFT, F. X., *Vienna*—Manufacturer.
Plain and brocaded silk handkerchiefs.
Ladies' scarfs and shawls.
- 274 WOJTECH, FRANZ, *Vienna*—Manufacturer.
Fancy silk goods, waistcoatings, satin scarfs, &c.
- 275 HIELLEN, ELIAS (Sons of the late), *Schönlinde,
Bohemia*—Manufacturers.
Sewing, crochet, and knitting thread.
Linen.
[Although the ancient and, in former times, flourishing
linen trade of Austria has suffered greatly by the intro-
duction and progress of the cotton manufacture, and
spinning by machinery, it still occupies an important
position; and the linen of the mountain districts of Bohe-
mia, Moravia, Silesia, and Salzburg is of undeniable excel-
lence. The Government is also constantly exerting its
influence for the improvement of the growing and pre-
paration of flax.
Among the hemp manufactures, of which specimens
have been sent, some are distinguished by their novelty,
as, for example, variegated coloured hemp thread for
ladies' fancy work, frequently preferred to silk.
The linen yarns of Austria are mostly hand-spun:
machine-spinning is, however, on the increase. Samples
are exhibited both of hand and machine spun yarns.]
- 276 TAUBER, FEED., *Unter-Meidling, near Vienna*—
Manufacturer.
Tow-thread, coloured, of various kinds.
- 277 ROPE-MAKERS' ASSOCIATION, *Hermannstadt,
Transylvania*.
Manufactures of hemp and flax, including girths, cord-
age, &c.
- 277A HERMANNSTADT TRADE UNION (BINDER, T.,
Director), *Hermannstadt, Transylvania*.
Cotton and linen cloth, waistcoat quilting, flax thread
trousering, bleached and unbleached linen.
- 278 JÄGER, FRANZ JOHANN, *Prague, Bohemia*—
Manufacturer.
Cordage.
Carpet of Italian hemp, and one of New Zealand hemp.

- Saddle-girths, halters, bridles, &c.
Bell-ropes of New Zealand hemp (*Phormium tenax*).
- 279 PARSCH BROTHERS, *Graupen, Bohemia*—
Manufacturers.
Water-hose of Bohemian hemp, for fire-engines.
- 280 WEINBERGER, GOTTLIEB, *Linz*—Manufacturer.
Hemp manufactures, covered with lasting wools; saddle-
girths; lines; twisted cords; twines; various cordages
from hemp; twine from German hemp.
- 281 BUTSCHEK & GRAFF, *Brünn, Moravia*—
Manufacturers.
Sail-cloth of different kinds, spun and wove in the same
manufactory.
- 282 CHIACHICH, MICHELE, *Fiume*—Manufacturer.
Sail-cloth of different kinds.
- 283 THE BENEVOLENT SOCIETY'S ESTABLISHMENT,
Milan.
Three table-cloths and a piece of Lombardy linen.
- 284 FERIE, WENZEL, *Merklow, near Starckenbach,
Bohemia*.
Hand-spun linen yarn.
Fine cambric of linen thread, spun by inhabitants of
the Riesengebirge, Bohemia.
Ladies' linen pocket-handkerchiefs.
[The oldest of all the branches of Austrian industry is
the linen manufacture. It is, moreover, the most im-
portant of them, and continues to be so, intrinsically, on
account of the extraordinary large number of persons
whom it employs, part of them throughout the whole
year, part of them for a shorter time; but it has suffered
severely by the rapid development of the cotton manu-
facture, which, availing itself of the working powers that
had been already organized by the linen manufacture, em-
ployed them far more profitably. The linen manufacture
suffers, however, still more sensibly from the circumstance
that the necessary degree of care is not devoted to the
important object of getting rid of defects of preparation
and management which are universally acknowledged to
exist under the present system. These defects extend
even to the production of the raw material; for the cul-
tivation of flax and hemp is carried on in Austria as if it
were but a subsidiary or secondary object, it being deemed
not sufficiently remunerative. A raw material, however,
of excellent quality is produced. The flax, especially that
grown in Bohemia, Moravia, and Silesia, is equal to the
best produced in any other part of Europe; but, from the
careless steeping it receives, it loses enormously in value:
large portions of it are partially spoiled, and the waste of
the general production is unnecessarily increased. As
yet, moreover, machine-spinning has not attained any
very considerable degree of development, and the hand-
spinning, which affords but a scanty and precarious
living, supplies in general but an imperfect and irregular
article.]
- 285 HARRACH, Count, *Janowitz, Moravia, and
Starckenbach, Bohemia*—Manufacturer.
Linen damask furniture.
Damask table-cloths and napkins.
Linen towels.
Linen handkerchiefs. Linen web.
- 286 HAUPT, LEOPOLD, *Brünn, Moravia*—Manufacturer.
Specimens of common and damask linen; mixed fabrics;
striped and coloured cloths; various ticks; and un-
bleached white yarn linen.

287 **MAYER, JOH., Haidach, Upper Austria—**
Manufacturer.

Linen table-cloths, towels, and napkins.

288 **PELINDIAN'S (FRANZ HEINRICH, Hohenau, Bohemia—**
Manufacturer.

Linen yarn, hand-spun.
 Linen of different kinds, green-bleached. Linen web.
 Pocket-handkerchiefs.

A portion, more or less considerable, of the time of three millions and a half of individuals is employed in spinning, so that on an average it is found that each of these persons spins 20 lbs. of yarn, a product for which 75 days' labour is requisite. If the number of working days in the year be taken at 270, it will follow that more than two millions of persons find employment in this occupation throughout the year. The average daily earnings, however, of each person thus occupied do not exceed 24 kreuzers, even if the whole income of value be considered as wages.

The above-mentioned quantities of yarn do not meet the whole demand for the manufacture of woven goods, thread, knitted articles, and hosiery; and the imports, both of fine yarn and of raw yarn, caused the exports. The half-bleached raw material, which is subjected to ultimate processes of manufacture, amounts to 1,153,000 cwt., whereas 626,500 cwt. are raw yarn.

289 **PETRAK, JOSEF, Brunnau, Bohemia—Manufacturer.**

Prepared flax.
 Linen yarn, raw and prepared.
 Linen pocket handkerchiefs.

290 **REICH, JOHANN & CO., Schindlberg, Moravia—**
Manufacturers and Bleachers.

Bleached shawls and web, of all widths and lengths, of the best hand-spun and machine yarn.

291 **SIMONETTA, PETER, Heftensberg, near Linc—**
Manufacturer.

Web linen table-cloths.
 Dowels, all linen and half linen.
 Damasks. Waistcoatings.
 Half-woolen stuffs, human wool and cotton.
 Rough, fine, and mixed drills.

The manufacture of linens is carried on in Bohemia, Moravia, Silesia, and Galicia on the largest scale. Of the entire productions about five-twelfths are brought into the market, and of this quantity the bulk must be of domestic manufacture, since few great linen manufactories exist in Austria. Among the linen fabrics, table-cloths and napkins, veils, casabrics, dimities, twills, and drills are important articles. In the next rank we must place the manufacture of thread, especially in Bohemia, Moravia, and Lombardy. The tape manufacture is of less consequence; and as to the business of dyeing and printing, that has been almost entirely absorbed by the cotton manufacture, and is now in requisition for thread and handkerchiefs only.

As the loss resulting from the processes of weaving, bleaching, &c., is estimated at about 10 per cent., the net aggregate of our manufactures of linen, thread, &c., may be assumed at, say, 1,087,000 cwt., of which quantity about 450,000 cwt. come into the market, the rest being absorbed by domestic consumption. Since, upon an average of the five years, 1843 to 1847, there appear to have been imported from abroad only 242 cwt., whereas the average of exports for the same period shows 42,609 cwt., it follows that there remained for home consumption about one million cwt. Thus, on a population of 26,000,000

of persons, about 24 lbs. would fall to the share of each; but this estimate falls much below the truth, when we consider that the national costume in Hungary and Galicia requires more than double the quantity we have allowed above. In fact, the crop of flax is estimated to be 10 per cent. higher than is given in the official reports; but the consumption of even 3 lbs. per head, which would thus result, is yet smaller than in reality it must be. In the imperial army the quantity used up annually by each man averages more than 7 lbs.

In the above statistics of the manufacture of linen goods no allowance has been made for the extensive production of rope-work and the like.

292 **VONWILLER & CO., Haidach and Steinfambury,**
Upper Austria—Manufacturers.

Mixed cotton and linen, drills, and rips. Linen gingham and handkerchiefs.

293 **WITZCHEL & REINBERG, Warendorf, Bohemia—**
Manufacturers.

Figured linen trousersings. Nankeens.
 White waistcoatings, of various patterns.
 Gambroon linings. Crapes, drills, &c.

294 **BLASCHKA & CO., Liebenau, Bohemia—**
Manufacturers.

Woolens. Orisons, various colours, figured and plain.
 Silk and plain rips, coloured.
 Lastings. Thibet handkerchiefs.
 Printed shawls. Circassian shawls.

295 **BECKER'S WIDOW, RUDOLPH, Vienna—**
Manufacturer.

Ladies' figured dresses.
 Long shawls: woollen bayadere.
 Cadmore waistcoatings: gentlemen's scarfs.

296 **PUREY JOSEF, Vienna—Manufacturer.**

Fancy stuffs, including ladies' half silk dresses.
 Fine madding, and figured cotton dresses.
 Figured half woollen cloaks.
 Scarfs half and entirely of wool, for ladies and gentlemen.
 Printed cotton handkerchiefs.

297 **KRUDISCH, M., Assing on the Elbe, Bohemia—**
Manufacturer.

Cloth of wool and cotton, alpaca, poil de chèvre, &c.

The manufacture of mixed stuffs seems to require special mention, because the materials employed usually experience a higher ratio of increased value in the process than they do when incorporated into articles manufactured from one raw material only. This manufacture of mixed stuff is most important in Bohemia, Lower Austria, Moravia, Silesia, Lombardy, Galicia, and Upper Austria. Bohemia finds employment in the manufacture of her fabrics of cotton and linen yarn, for nearly 2,000 looms; in those of cotton and woollen yarn, for nearly 8,000 looms; of linen and woollen yarns, for about 300 looms; of linen, cotton, and woollen yarns, for 300; of different yarns, combined with silk, for 200 looms. In Lower Austria the stuffs which are composed of cotton and woollen yarns and those which are mixed with silk stand first on the scale of relative importance. In Moravia and Silesia the stuffs of cotton and linen yarn, those of mixed cotton, linen, and woollen yarn, and those of cotton, linen, and woollen yarns and silk combined, are of most consequence. In Lombardy the mixture of silk character of the predominant manufacture. Gal confines herself to the manufacture of half linens, and

cotton and flax or hempen yarn. In Austria likewise these half linens (composed of cotton and flax yarn), and truserings, made of cotton and woollen yarns, are of much importance. The mixture of cotton yarn and silk (for waistcoatings and furniture) may rank next to them.]

298 LIEBIG, JOHANN, *Reichenberg, Bohemia*—
Manufacturer.

An assortment of plain and figured printed woollen stuffs, comprising Orleans, Thibet, lasting, mandarin, &c. Winter shawls, printed Thibets, &c.

299 NEUBERT, C. G., *Georgswalde, Bohemia*—
Manufacturer.

Balzarine, challis, pergalin, muslin, and mixed fabrics, prepared for printing.

300 RAMEDEK, IGNAZ, *Vienna*—Manufacturer.
Woollen shawls; petticoats; counterpanes.

301 WOLFRUM, C., *Aussig on the Elbe, Bohemia*—
Manufacturer.

Cotton and woollen stuffs, including victorines, poile de chèvre, imperials, alhambras, fil de chèvre, &c.

302 WÜRST, JOHANN N., *Freudenthal, Silesia*—
Manufacturer.

Table-covers, in various colours and styles of workmanship.

303 BIENERT, FLORIAN, *Vienna*—Manufacturer.
A variety of waistcoatings.

304 ECHINGER BROTHERS, *Vienna*—Manufacturers.
Waistcoatings and woollen scarfs for gentlemen.

305 KRAL, ANTON, *Vienna*—Manufacturer.
Waistcoatings of various kinds.

306 ROCKSTROH, HEINRICH, *Vienna*—Manufacturer.
Waistcoatings of wool, and wool and silk.

307 FIAL, JOHANN, *Vienna*—Manufacturer.
Waistcoatings of wool, and of half silk.

308 WESTHAUSSER, JOSEF, *Vienna*—Manufacturer.
Waistcoatings of piqué and wool.

309 BERGER, JOSEF, *Vienna*—Manufacturer.
Ramage, long, and a variety of other shawls.

310 BROZMAN, ADAM, *Vienna*—Manufacturer.
Tapis and ramage shawls of various colours.
Long shawls.

311 HAYDTER, SEBASTIAN, *Vienna*—Manufacturer.
Ramage and long shawls of various colours.

312 KUBO'S SON, JOHANN, *Vienna*—Manufacturer.
Tapis and ramage shawls.
Long and Thibet shawls. Table-covers, &c.

313 MARTINEK, JOHANN, *Vienna*—Manufacturer.
Tapis and ramage shawls.
Long shawls.

314 MOGEL, NIKOLAUS, *Vienna*—Manufacturer.
An assortment of shawls.

315 REINHOLD, WILHELM, *Vienna*—Manufacturer.
Tapis and ramage shawls.
Long and Cashmere shawls.

316 RISS, JOSEF, *Vienna*—Manufacturer.
Ramage and long shawls.

318 SCHINDL, ANDREAS, *Vienna*—Manufacturer.
Shawl-handkerchiefs and long shawls.

319 WENZEL, KARL, *Vienna*—Manufacturer.
Fancy woollen and cotton shawls.
Shawls for mourning.

320 ZEISEL, J., & BLÜMEL, J. & C., *Vienna*—
Manufacturers.
Large assortment of shawls, shawl-handkerchiefs, long shawls and scarfs.

321 MESSNER, FRIEDRICH, *Reutte, Tyrol*—
Manufacturer.
Brown calf-skin.
Brown and black cow-hide, for waterproof boots.

322 POLLAK, J. J., & SONS, *Prague, Bohemia*—
Patentees and Manufacturers.
Brown, black, pressed, and grained calf-skin.
Black japanned calf and sheep-skin.
Black japanned grained sheep-skin.
Chamois dressed sheep-skin.

[The production of leather is an object of indispensable importance, and occupies a very prominent place among the branches of Austrian industry. It is an incontrovertible fact that the manufacture of leather, like the other great divisions through which the industry of Austria is distributed, has lately struck into a path of progress and improvement—especially as regards the tawing and the production of japanned and chamois leather, which are cheap and excellent. Bark tanning, on the contrary, has hitherto succeeded to a very small extent only in freeing itself from the disadvantages of the old system of procedure, and in its attempts to furnish an article which can compete at all with the Rhenish, Belgian, French, and English descriptions of sole and upper leather.

With respect to the raw material—the hides and skins—the domestic cattle reared in the interior of the monarchy, together with the considerable quantities that are furnished from abroad—especially from across the eastern frontiers and from Switzerland—are not by any means adequate to meet the annual requirements of Austria for her home manufacture.

The imports of raw and half-prepared hides and skins constitute an important part of the trade carried on by Austria. In the following statement of this trade, the division of the different descriptions of skins is taken according to the customs' tariff. The larger hides are employed, generally speaking, for the manufacture of sole leather. The smaller skins, which are mentioned in the second class, serve, with the exception of the calf-skins (which are for the most part bark-tanned), as the raw material for "tawing" and chamois tanning. The last skins mentioned, not under any particular name, are those which, partly in their rough state, partly as leather, have a special but limited application.

With respect to the localities from whence the raw material is derived for the Austrian leather manufacturers, two-thirds of the larger hides, afterwards worked up, come from Russia, from the Danubian Principalities, and from Turkey. The remaining third of this aggregate is imported by sea, as Buenos Ayres hides, which last are principally manufactured in Lombardy and Venice into excellent sole-leather, far exceeding in quality the productions of the other Austrian provinces. Two-thirds of the smaller skins come from Turkey, and among these must be included those sheep-skins which are obtained from the flocks that are pastured in Transylvania, but which winter in Bul-

garia. The remainder come principally from Albania and Greece by way of Trieste.

The annual quantity of raw material for the leather manufacture, including that imported, amounts to about 952,000 cwt.

In the manufacture of leather of all kinds, 198 masters, with 5,000 labourers, and nearly 4,000 leather-dressers and carriers, are employed—but this number does not include those engaged in the same occupations in Hungary.

Vienna alone, in its immediate neighbourhood, reckons eight of the largest leather establishments, and 95 tanneries, in which the processes of tanning are carried out on a very large scale.

With respect to the extent of this trade, the establishments at Prague in Bohemia, at Brünn in Moravia, Wilhelmsburg and Krems in Lower Austria, at Reutter in the Tyrol, at Milan, and at Venice, take the greatest share in this productive branch of Austrian industry. In Hungary, the largest seats of the leather manufacture are at Pesth-Ofen and Presburg. Tanning is very actively carried on in Transylvania at Hermannstadt, and among the Szeklers, who especially lay themselves out for the preparation of morocco leather, and pursue that branch with great success. The production of leather of all descriptions in Austria is calculated to amount annually to 545,000 cwt. Although the demand for alum and chamois, tanned and japanned, or enamelled leather, is perfectly covered by the home manufacture, so that the exports and the imports pretty nearly balance one another, this is not the case with Russia leather and leather prepared with wood dyes.]

324 SEYKORA, JOSEPH, *Adler Kostelec, Bohemia*—
Manufacturer.
Cow-leather, tanned with pine bark.

325 SUESS, A. H., *Vienna*—Manufacturer.
Brown calf-skin, japanned calf-skin, calf and sheep skin, and kid leather in various colours for fancy articles.
Sheep-skin for furniture covering.

326 WOLFF, FRIEDRICH, *Hermannstadt, Transylvania*
—Carrier.
Japanned goat and sheep skins of various colours.
Calf-skins.
Coloured goat-skins.

327 CHRISTL, JOSEPH, *Vienna*—Manufacturer.
Gentlemen's boots and shoes, waterproof shooting-boots. Boots with cork and wood-pegged soles, and with hollow heels.

328 FRANK, J., *Vienna*—Patentee.
Patent boots soled with a newly-invented material.

329 LANGER, JOSEPH, *Vienna*—Manufacturer.
Gentlemen's boots and shoes.

330 SHOEMAKERS' ASSOCIATION, *Hermannstadt, Transylvania*.
Shoes and boots (called Tschiszmen) belonging to the Saxon and Romanian national costume.

331 HELIA, JOHANN, *Vienna*—Manufacturer.
Ladies' shoes, boots, and slippers.

332 FRIEDL, LEOPOLD, *Vienna*—Manufacturer.
Ladies' shoes, over-shoes, and half-boots with pegged soles.

[Of the modes of manufacturing leather, those which regard the covering of the human feet are maintained in

the greatest extent, and employ more than 60,000 shoemakers, with a number of assistants almost as large. But the manufacture of such articles ranks among the smaller trades only, and is confined as it were to home uses, with the exception of ladies' shoes manufactured in Vienna, which are known to be excellent, and, on account of the elegance of their make and their moderate price, find an extensive sale abroad. Besides these, a considerable export of shoes takes place from Trieste, which are designed for various markets in the Levant. In the southern provinces of Hungary a very large quantity of shoes and slippers is made for sale in Turkey, and in the military provinces many laced boots are annually manufactured.]

333 KUNERTH, ANTON, *Vienna*—Manufacturer.
Ladies' shoes. Velvet slippers with gold embroidery.
Gentlemen's shoes. Over-shoes.

334 BOULOGNE, P., *Prague, Bohemia*—Manufacturer.
Kid and lamb skins for gloves.

335 JAQUEMAR, FRANZ, *Vienna*—Manufacturer.
Gloves for ladies and gentlemen.

[The making of ladies' leather gloves is a branch of trade extensively followed in Vienna and Prague. The production of this branch not only covers the entire demands of the home market, but furnishes also large exports to the Danubian provinces and to Turkey. In Vienna alone there are established more than 250 glove-makers, some of whom carry on their business on a very large scale. They employ above 500 workmen and nearly 3,500 female sewers, who furnish annually more than 180,000 dozen pairs of gloves. Prague reckons about 50 manufacturers of gloves.]

336 GLOVERS' ASSOCIATION, *Prague, Bohemia*.
Ladies and gentlemen's gloves of kid, lamb, and sheep skin.
Gentlemen's gloves of rein-deer leather.

337 PORTSCHEST LEATHER-CUTTERS, *Hermannstadt, Transylvania*—Manufacturer.
Sheep-skin, goat, and kid leather.

338 GELLINEK, JOHANN, *Prague, Bohemia*—
Manufacturer.
A set of silver-plated harness.

339 LÖFFLER, FRIEDRICH, *Prague, Bohemia*—
Manufacturer.
Saddles of various kinds. Saddle-tree for horses, with curved back.

340 ZAPP, IGNATZ, *Vienna*—Patentee and
Manufacturer.
Various saddles, girths, bridles, and horse-rugs, &c.

[The manufacture of fancy articles of leather has made great progress of late years. This has been the case particularly in the trade of bookbinding, both in Vienna and Prague, where this branch of trade is conducted on a large scale: these not only satisfying all the requisitions of a daily increasing luxury at home, but also commanding a very profitable sale abroad. In the manufacture of harness, saddles, and various articles of furriery, Vienna, Prague, and Milan, excel all other cities and towns in the empire. In fact, the parties engaged in this branch of manufacture not only supply the whole demand of the monarchy, but also export largely annually to foreign countries, principally to Turkey.]

- 341 GRIESS, FRIEDRICH, *Vienna*—Manufacturer.
Riding and other whips, with buttons and handles of silver, ivory, whalebone, horn, &c.
- 342 MANSCHÖN, M. F., *Pesth, Hungary*—Manufacturer.
Hungarian Caikós whip.
- 343 GEOSKOFF, GEORG, *Vienna*—Manufacturer.
Travelling trunk and hunting-pouches.
- 344 EINHAUSER, JOSEF, *Uderna, Tyrol*—Leather-cutter.
Leather reticule, embroidered with peacock feathers. Tyrolean hunting-pouches, gun-slings, and belts.
- 345 LEATHER-CUTTERS' ASSOCIATION, *Hermannstadt, Transylvania*.
A belt.
- 346 GEYER, J., *Pesth, Hungary*—Furrier. (Agent, Mr. J. G. Mayer, 68 Oxford Street, London.)
Hungarian sheep-skin Bunda (a cloak).
- 347 ASSOCIATED FURRIERS, *Hermannstadt, Transylvania*.
Black lamb-skins.
Wallachian and Heltau fur stomachers and vest.
- 348 DINZEL, FRANZ, *Vienna*—Manufacturer.
Gutta serena articles, including sticks, riding-whips, snuff-boxes, goblets, flower-pots, &c.
- 349 LANG, FRANZ, *Stadt-Steyr, Upper Austria*—Manufacturer.
Artists' brushes of various kinds.
- 350 PATTAK, GEORG, *Hermannstadt, Transylvania*—Manufacturer.
Horse-brush.
Clothes and hair brushes.
- 351 BAYER, J. GEORG, *Hermannstadt, Transylvania*—Hatter.
Felt cloth, dark brown; scarlet and black for waist-coats and caps; and materials for making felt.
- 352 HCBSCHE, JOS., *Prague, Bohemia*—Manufacturer.
Bohemian silk and felt hats.
- 353 KRISZ, CARL, *Prague, Bohemia*—Manufacturer.
Felt and silk hats.
Thibet mechanical hats.
- 354 MUCK, JOSEPH, *Prague, Bohemia*—Manufacturer.
Silk and felt hats and bonnets, of various kinds.
Felt shoes and boots.
Samples of coloured felt cloth.
- 355 SEBA, ANTON, *Prague, Bohemia*—Manufacturer.
Felt and silk hats; waterproof military hats; shooting hats of wool and felt.
[The manufacture of felt hats is carried on by upwards of 3,000 dealers in these articles, not including those of Hungary. Very few establishments for hat-making are carried on upon a large scale; and Vienna and Prague are the principal seats of the manufacturers both of felt and of beaver hats. Milan produces silk hats in large quantities, and of excellent quality. Of late years the production of fine felt hats in the Germanic Austrian provinces has fallen off, while the manufacture of silk hats after the Parisian manner is making great progress.]
- 356 BENEDIG, JOSEF, *Strassisch, Carniola, Krainburg*—Manufacturer.
Horse-hair sieve-bottoms of various kinds.
Cylindrical sieve-bottoms, for paper manufactories.
[Sieve-bottoms are made in Illyria in considerable quantities at very moderate prices, and of good quality. They are principally exported; and chiefly to Italy, France, the Netherlands, Spain, Gibraltar, Servia, Bosnia, &c.]
- 357 GLOBOTSCHNIG, ANTON, *Strassisch, Carniola*—Manufacturer.
Horse-hair sieve-bottoms, of various kinds.
Cylindrical sieve-bottoms, for paper manufactories.
- 358 LOCKER, D'ANTONIO, *Krainburg, Carniola*—Manufacturer.
Horse-hair sieve-bottoms of various kinds.
Cylindrical sieve-bottoms, for paper manufactories.
- 359 PFENNINGER, JOSEF, *Heiligenstadt, Vienna*—Manufacturer.
Oil-cloths, made of figured fustians and cottons. Table-covers to resemble wood. Floor-cloths. Carriage carpets.
- 360 SMITH & MEYER, *Vienna*—Manufacturers.
White printing, drawing, writing, foolscap, and letter papers, of various kinds.
Coloured papers.
[It is only of late years that the paper manufacture although belonging to the oldest branches of industry subsisting in the Austrian monarchy, has by reason of the introduction of mechanical power made any considerable progress, and at the same time partially supplanted the smaller establishments.
Lombardy, Lower Austria, and Bohemia occupy, among the provinces of the Austrian monarchy, the first rank in the manufacture of paper. After them come Venice and the Tyrol. In the other provinces the paper factories are for the most part but of small extent; Dalmatia has none whatever. Lower Austria possesses the most extensive paper manufactories. The average production of the monarchy amounts to 650,000 cwt. of paper. Of this quantity 250,000 cwt. are ordinary writing paper; 60,000 cwt. fine paper; 20,000 cwt. drawing paper; 150,000 cwt. printing paper; 100,000 cwt. packing paper; and 60,000 cwt. paper for technical purposes. As to the various sorts or kinds of paper, Bohemia and Lower Austria produce the most writing paper; Lombardy and Bohemia, fine paper; Lombardy, drawing paper; Lower Austria and Bohemia, printing paper; Lombardy and Venice, packing paper; and Bohemia and Lombardy, paper for technical purposes.
The manufacture of paper employs directly 12,000 people, and indirectly at the least as many more. The mills are driven by water power, with the exception of some few to which steam power and machinery have been applied. Two-fifths of the whole production are made by machine, and three-fifths by hand.]
- 361 EGGERTH, JOH., *Stubenbach, Schüttenhofen, Bohemia*—Manufacturer.
Packing paper (flannel paper), of a peculiar kind, to be used in packing mirrors or glasses, by laying it between the same instead of strips of cloth.

362 IMPERIAL COURT AND GOVERNMENT PRINTING OFFICE, Vienna.

Specimens of typography and printing of all descriptions.

[Called upon by the State to undertake the printing for all the Ministries, for Government and the Courts of Justice, for the Army, Post-Office, Customs, &c., as well as to execute its bonds and paper money, securely, quickly, and agreeably to all practical requirements, this establishment has likewise aimed at cultivating and perfecting the graphic arts, and thereby rendering important services to art and science. The union within its walls of all the different branches of the graphic arts, tending to the multiplication of words or pictures, is the point which distinguishes this Institution from all others of a similar nature.

The greatest portion of this work is for the use of the Government offices; but in cases where artists or men of learning can find no publishers for their works, or where such works, on account of the difficulty and expense of their execution, could not be produced in any other establishment, but deserve support in the interests of art and science, with consent of the Ministry, leave is given to have them brought to light by the extensive resources of the State printing office. By the liberality of the Austrian Government, the charges in such cases are fixed on a very moderate scale, and their liquidation is allowed to take place gradually, in the course of several years, by the sale of the work itself, which will have had time to become known.]

Punch-cutting Department.—Steel punches of foreign characters only. Of these the Imperial establishment possesses 104 alphabets of the languages of the whole globe, without reckoning the different sizes in which many of the alphabets have been cast.

Punches of types used for books printed in the middle age, from the sixth to the sixteenth century inclusive. Types for the use of the blind of Europe and Asia. The alphabets are as follows:—

Hieroglyphic	Albanian (differently shaped)
Hieratic	Lycian
Demotic	Armenian
Ethiopic and Amharic	Georgian
Himyaritic	Georgian (ecclesiast. letters)
Himyaritic (ornamented)	Persepolitan (cuneiform letters)
Calylic, American inscript.,	Pehlevi
Touaric and Thugga	Zend
Ancient Hebrew	Cabool
Samaritan	Peguan
Hebrew	Oldest Indian signs
Raschi, or Rabbinic	Western Grotto inscription
German Hebrew	Agoka inscription
German Raschi	Inscription of Guzerat
Hebrew, Spanish-Levantine	Dynasty of Gupta (Allahabad)
Armaic	Bengali
Chaldee	Ahom
Palmyric	Tibetan
Estrangelo	Passepa
Syriac	Kutla (ten years after Christ)
Cufic	Devanagari (Sanscr. No. 1)
Arabic, Neschi	Devanagari (Sanscr. No. 2)
Mauritanic	Kashmerian
Phenician	Sikh
Phenician (ornamented)	Assam inscript.
Punic	Mahratta
Numidian	Orissa
Etruscan	Gujeratee
Ancient Italian	Kayti-Nagari
Runic	Randscha
Gothic	Bandschin-Mola
Celtic	Multan
Celtic (new shape)	Sindhee
Anglo-Saxon	Nerbudda
Ancient Greek	Kistna
Græc	Telinga
Coptic	Karnata
Ceylic	Tamul
Ceylic (differently shaped)	Malayalim
Rossian, Servian, Wallachian	Cingalese
Glagolitic	Maldivian
Albanian	Javanese

Kiousa
New Pali (No. 1)
New Pali (No. 2)
Siamese
Kamboga (with joints and without)
Laos
Birmese
Shyan
Bugis
Bisaya

Batta
Tagala
Mongolese
Mandschu
Chinese
Coreanic
Formosan
Japanese (Katakana, No. 1)
Japanese (Katakana, No. 2)
Japanese (Pirokana)
Tschirokisian

Xylography.—Three large woodcuts, after religious historical drawings by Führich, together with impressions of them in gutta percha, and matrices produced by means of the galvanic process; also specimens of historical and several other representations. A collection of seals, and several woodcuts after Albrecht Dürer.

Chemitypy.—Representations of the different departments of the Imperial establishment, etched on zinc, chemityped, and printed with the common printing press: a new invention by Püil, for etching on zinc in a raised manner.

[If this art be not calculated to supersede wood engraving, it can be applied with great advantage for certain purposes in the etching style, for maps, plans, drawings of machines, &c. A zinc plate is covered with an etching ground, the drawing etched in the usual manner with the needle, and bitten in. The etching ground is now removed, the deep lines cleaned with acid, and then the whole plate, in a warm state, covered with an easily fusible metal, with which, of course, the lines of the drawing are filled up. When the metal thus laid on is cold and firm, the whole plate is planed until the zinc appears again, and only the lines of the drawing remain filled with the fusible metal, which is easily distinguished by its white colour, from the grey of the zinc. The whole plate is now etched several times; the former lines of the drawing, filled with this easily fusible negative metal, are not affected by the acid, while the pure zinc is eaten away. In this manner a drawing for printing in the copper-plate press can be converted into one in relief for use in the ordinary printing press.]

Letter-founding.—Matrices of the newly-cut Neschi or Arabic-Turkish characters, used for printing; also several specimens of matrices produced by the galvanic process. Composition of a Chinese text with moveable types, which consist of 400 signs, lines, and points, by which almost all the Chinese characters may be formed. A specimen, showing the composition of Japanese with moveable types, for comparison with music, which is also composed with moveable types.

[The combination of the Chinese characters develops a new invention of the highest interest. The 80,000 signs of that language are formed in the same manner as music is formed with moveable type, according to the typometrical system of M. Auer, the director of the establishment. This system contains about 400 points and strokes; and although the trouble of joining these is taken into account, still the advantage of Gutenberg's invention of printing with moveable types is manifestly of the greatest importance, when we consider the immense number of Chinese characters.]

Stereotyping Department.—The types of the characters of the entire globe, two large tables, each of 540 square inches, stereotyped in type metal, together with gutta percha and plaster of Paris matrices, also copies of them produced by the galvanic process.

Electro-Metallurgy.—Raised and engraved plates of woodcuts and objects of typography and chalcography.

Copy of two petrifications of the fishes *Pycnodus Fenslii* and *Chirocentrites coronarii*.

[The original was first incrustated with gutta percha. This crust was taken off, and, after being prepared, placed

in the galvanic apparatus: a copy was thus obtained, without the aid of a drawing, which is quite fit for printing.]

A large plate 33 feet long and 2½ feet broad. On account of the difficulty of transporting this, the plate is very thin.

Three large tables of copper matrices, each of which contains 1,200 Chinese characters.

Two large plates of 1,800 square inches each, for copper-plate printing or polishing.

Several gutta percha matrices for the use of this department of science.

Refuse of copper used in the electro-galvanic process, stretched, rolled, beaten, &c., to show the quality of the same.

Works of sculpture from the antique (high reliefs and low reliefs), &c., electrotyped in copper.

Several metal frames, produced by the galvanic process, containing photographs.

The stereotype plates are of galvanic copper.

Typometry.—Illustrations of the system of calculating and measuring off the space taken up by the respective letters, by the Director of the Imperial establishment, Alois Auer, Government Counsellor and Member of the Imperial Academy of Sciences. (An explanation of this system has been printed in the memorials of the Academy, Vol. I.)

[The system of Typometry, or the method of calculating and measuring the space taken up by each separate letter, deserves attention. Not only is the advantage of being able to calculate by this system what space manuscripts will occupy when they are printed of great importance, but a still greater advantage attaches to this system, namely, that all sorts of tabular matter may now be much more easily arranged, because the space taken up by each separate column can be calculated to the greatest nicety: this is of great importance in a technical point of view.]

Three thousand hundred weight, or 150 millions of letters, have been cast in the foundry of the establishment according to this system.]

Typography. — Some of the specimens of printing of the Imperial establishment, as German, Roman, and Italic types, the punches of which were cut in the establishment. Likewise all the script and ornamental letters which are in use on the European continent.

Printed texts of the foreign characters of the whole world, some of them of various sizes.

German letters used for books during the middle ages, from the sixth century to the invention of the art of printing.

The type of the first printed work, Gutenberg's Bible, in four different sizes.

Ornamental letters copied from originals of the seventeenth century.

Types for the use of the blind, in the European and Asiatic languages.

Typographical Productions in Glazed Frames.—"The Hall of Languages," published by the Director of the establishment, A. Auer, Government Counsellor.

First Part.—The Lord's Prayer in 608 languages and idioms, printed with Roman type; with their respective interpretation. In nine tables.

Second Part.—The Lord's Prayer, printed with the characters appropriate to the respective nations, containing 206 varieties of language, and a survey of more than 100 foreign alphabets and characters, with transcriptions. In eight tables.

Development of the literal characters of the whole globe, in a genealogical form. On one hand from the Chinese characters, to which are added the Koreanic and Japanese characters, and on the other hand from the African hieroglyphic signs, which are immediately followed by the Egyptian hieroglyphic characters, which represent the first

known signs of writing. All the rest of the alphabets take their origin from these, and then branch out into numberless ramifications which are traced up to the characters used throughout the world at the present day.

The Gutenberg Bible, of which a page contains 42 lines, with painted ornamental border.

In the Portfolio.—Types of the Propaganda at Rome, in 23 alphabets.

Bodoni's "Oratio Dominica," 28 alphabets.

The foreign types of France, from Falkenstein's History of the Art of Printing, 42 alphabets.

The foreign types of Germany, after Ballhorn, 19 alphabets.

The types of India, 13 alphabets.

Pedigree of the Emperors of Austria.

Ground-plan sketches of the whole of the Imperial Establishment.

Two smaller portfolios contain an album in 16 languages, printed for particular occasions.

Printed Books in ordinary Binding.—Memorials of the Imperial Academy of Sciences, one volume. Objects illustrative of the sciences of mathematics and natural history: to this is added a map of 58 tables, executed in coloured lithographs.

Memorials of the Imperial Academy of Sciences, one volume. Objects illustrative of philosophy and history. With 12 lithographed tables.

The typometrical system of the Director of the Establishment, Alois Auer.

Hammer-Purgstall, Rhetoric of the Arabs, 1st volume.

Treaties between Austria and Turkey, Turkish, with a translation.

Pfizmaier's Arabic-Persian-Turkish Grammar.

Schlechta, Abdurrahman Dschami's "Frühlingsgarten," Persian and German.

Schlechta, "The Right of Nations in time of War and in time of Peace," two volumes, translated from the German into Turkish.

A Treatise on the higher Arithmetic, Turkish.

Boller's Sanscrit Grammar.

Catalogue of the Hebrew Manuscripts in the Imperial Library at Vienna.

Goldenthal, Clavis Talmudica, Hebrew.

Arnth, Cabinet of Coins and Antiquities.

Bolza, Manuale.

Kohlgruber, Hermeneutica.

Statistics and Tables of Commerce of the Empire of Austria, 9 volumes in folio.

History of the Austrian National Bank.

Lira del Popolo, two parts, for the use of singing-masters.

Hoven, Heine's Songs, one volume in 4to., printed with moveable types for music.

(In the press. Printed with the original types.) For Dr. Mehren of Copenhagen—Rhetoric of the Arabs.

For Dr. Holmboe of Christiania—Comparative Knowledge of Languages.

For Dr. Zenker of Leipsic—Turkish Chrestomathy and Dictionary.

For Dr. Spiegel of Erlangen—Zend-Avesta, by Zoroaster.

Diplomatium of the Monastery at Kremsmünster, printed with the types appropriate to the respective centuries.

Pfizmaier's edition of "The Four Screens," a Japanese novel, with a German translation. For the first time printed with moveable Japanese types.

[This work in the Japanese language, printed for the first time with moveable type, and accompanied by a German translation of Dr. Pfizmaier, deserves notice. Though but little known in its native country, this edition has been translated in America, and is already in the press. The appearance of this Japanese novel caused a great sensation in foreign countries: the perfection with which the printing had been executed actually created the doubt

in the minds of the members of a German Society for the promotion of the Oriental languages, whether the Japanese part and the illustrations of this work had not been executed at Japan, and the German part only at Vienna.

"At the first view," observes a writer in the *Journal of the Oriental Society*, "a sceptical critic might be led to suppose that the honourable Imperial establishment had bought the original edition at Japan, from which place it was also furnished with the paper on which the German translation had been printed, and that then it had both parts bound together. But no! this fine satin-like paper is of German manufacture; these Japanese characters, which with their arabesque-like scrolls resemble the productions of transient stenography; and these printed illustrations, with portraits, costumes, buildings, and utensils, which seem to belong to a different world—they were not produced by woodcutting at Jedo, but have been closely copied at Vienna, from the originals, by means of typography and zinco-lithography. That is, the Japanese characters have been printed, for the first time, with moveable type, and the illustrations, together with some explanations belonging to them, and the preface, have been engraved on zinc; proofs of them were then pulled on paper, after which they have been transferred to stone."]

Specimens of Chromo-lithography. (By Hartinger.)—Two flower-pieces. One fruit-piece. One head for study. One still life.

Genre-picture, representing the Emperor Joseph II., who prescribes 100 ducats as medicine to a widow who is dying of hunger.

Flowers (16 plates). For the work, "Paradisus Vindobonensis."

Butterflies, petrifications, plants, objects of architecture, &c.

The original oil paintings are hung up next to them, in order that they may be compared at pleasure with the printing in colours.

[The impressions printed in single colour exhibit the manner in which the various colours have been combined. The point-holes, which may be perceived, are produced by a pin on the stone, by which the several colours are made to fit closely to each other.]

Illustrations of remarkable diseases of the human skin, six sheets.

Copper-plates and Steel Engravings.—Illustrations for works, and cards printed on particular occasions.

Galvanography.—The Departure. Executed on copper by Schindler, etched by Axmann, copied by means of the galvanic process, and printed at the Imperial establishment. There is subjoined, for comparison, the original as well as the copy produced by the galvanic process, and proofs pulled before the etching of the plate.

[Galvanography, in the short interval which has elapsed since its first appearance, has been divided into two methods. The first consists in the composition being executed by the artist himself with colour (roasted terra di Sienna, or black-lead and linseed oil) and the ordinary brush, in the same way as an Indian-ink drawing upon a silvered-copper plate, which is then placed in the galvanoplastic apparatus, in order to obtain a copy of the raised drawing. The copy, or sunk plate thus obtained, is touched up with the usual copper-plate engraving tools, and the light and shade improved, and then serves for printing from: it can, of course, by means of the galvanic apparatus, be multiplied to any desired extent. This method, certainly, possesses the advantage of allowing

rapidity in execution and great freedom of treatment. In the second method of galvanography, the outlines of the given drawing are etched in the usual manner, the various tones of the picture laid on with the roulette, and a galvanoplastic copy of this sunk plate is then produced. On this second (raised) plate, the artist completes his picture by means of chalk and Indian ink, and puts in the lights and shades, &c.; from this a second galvanoplastic copy is produced. This second copy, or sunk plate, the third plate in the order of procedure, serves, after being touched up, for printing from in the copper-plate press.]

Ornamental Department.—Original drawings in the Oriental and Occidental styles, executed for works printed for the East and West.

Ornamental Tools for Bookbinders.—Different ornaments exhibiting the Oriental and Occidental styles.

Photography.—Specimens of, by Paul Pretsch, Lower Road, Islington, London. Size, 16½ by 21½ inches, the largest photographic picture hitherto made.

Views of Schonbrunn (the usual summer residence of the Imperial Court) and of Vienna.

View of a garden.

Neptune group.

Gloriette (an elevated point, from which a most extensive view is enjoyed), Schönbrunn.

Entrance, with the obelisk of trophies.

Entrance to the Gloriette.

Interior of the Gloriette.

Three heads.

Two heads, Niobe and Caracalla.

A courtyard in the suburb Neubau.

The president of the institution, Councillor Auer, has made this combination the object of his peculiar interest. Ten years ago the establishment was not thriving; but by his unwearied care he has raised it to one of the greatest in the whole world. At this moment it occupies, in the different branches of business, more than 900 persons, in a space extending over 51,000 square feet.

Mechanical inventions, discoveries of science, the creative genius of the artist, and the productive activity of talent, are all successfully employed in conjunction with the powers of nature, as steam, the moving power, lighting, the hydro-electric fluid, and light, the producer of pictures.

Five large buildings, from four to six stories high, contain all the *matériel* of the establishment: these are connected with each other by means of galleries, while two stone and three iron staircases connect the upper with the lower floors. A steam-engine of 20-horse power moves 46 printing-machines, 24 copper-plate presses, and 8 glazing cylinders; it also pumps and raises cold and warm water to the different floors of the building, and, in addition, conveys through copper pipes hot air into all the rooms. Similar provisions supply four large wash-houses with the means of cleaning the types: a large high drying-house, which rises like a church between two of the other buildings, furnished with galleries all round the interior, is heated by the same means. All the workshops and rooms are lighted with gas, and provided with speaking-tubes, which end in 15 mouths in the office of the director of the establishment. There are also 43 large and 12 smaller iron letter-printing presses, 40 lithographic presses, 8 for numbering, and 5 for embossing, worked by hand. Eight type-founding machines and 10 furnaces, attended by four persons each, furnish a constant supply of fresh types, of which the establishment possesses about 3,000 cwt., or near 150,000,000 of letters all of which are kept in the greatest order. More than 300,000 sheets are printed daily, for which 600 reams

paper are required. Taking the year 1841 as an example, and comparing its productions with what is now done, the result shows that as much is now printed in 13 days as in the whole of that year.

363 IMPERIAL MILITARY GEOGRAPHICAL INSTITUTE,
Vienna.

A variety of maps.

Portfolio of maps engraved on copperplates, executed from a military survey, founded on astronomical and trigonometrical observations.

Topographical map of the Lombardo-Venetian kingdom. 42 large sheets. Scale $\frac{1}{561250}$.

Special map of Moravia and Silesia. 20 sheets.

Special map of Bohemia. 38 sheets. Scale of both maps $\frac{1}{111667}$ (of the last map seven sheets have been already published).

General map of Moravia and Silesia. 4 large sheets. Scale $\frac{1}{173333}$.

Topographical map of Central Italy, containing Tuscany and the Papal States, after a triangulation and an original survey, executed in these countries in the years 1841-3, by Austrian officers, under the direction of the Mil. Geog. Instit. Scale $\frac{1}{561250}$, in 49 large sheets, of which 11 have been published.

A reduction on the scale of $\frac{1}{173333}$ of the map of Paris, by Pelet. The two preceding are lithograph.

A small travelling and post map of the Austrian States, engraved on four stones, printed in colours, of which the complicated execution is to be considered with regard to its very small scale.

Globe, 2 feet radius, letter-press in the Armenian language. In 7 sheets. The drawing of the mountains with chemical crayon, the rest engraved on stone; printed in different colours.

Ethnographical map of Vorarlberg, the drawing of the mountains with chemical crayon, the rest engraved on stone; printed in six colours.

Geological map of the environs of Leoben, in Styria, transferred from a copperplate on stone, and printed in 11 colours.

Geognostical map of the Austrian States, with part of Germany and Italy, engraved on stone, and printed in colours in different manners.

Geognostical maps of Egypt, the Taurus, the Eastern Sudan, Syria, and Nubia, annexed to Mr. Russegger's "Travels," composed, drawn, and engraved on stone, and printed in many colours in the Imp. Milit. Geog. Instit.

Environs of Vienna and Baden, composed of 96 sheets, executed on stone after an original survey. Scale $\frac{1}{141333}$. The drawing of the mountains with chemical crayon, the rest engraved on stone; the different kinds of cultivation printed in colours.

General map of Europe, by Scheda, executed in the Imperial Royal Military Geog. Instit., composed of 20 sheets. The drawing of the mountains with chemical crayon, the rest engraved and printed in colours.

364 CERRI, CARL, Officer in the Imperial Military
Geographical Institute, *Vienna.*

Map of Italy in eight sheets, plain and coloured.

365 RAFFELSPERGER, FRANZ, *Vienna*—Patentee and
Printer.

Maps, with the names in the German, Hungarian, Bohemian, Servian, Illyrian, Italian, French, and English languages, executed by the ordinary printing press. Outline maps.

366 BATTAGIA, GIUSEPPE, *Venice*—Printer.

Specimens of typography, with simple and convenient binding.

367 HAASE'S SONS, GOTTLIEB, *Prague, Bohemia*—
Printers and Type-founders.

Type of various kinds; steel dies, matrices, &c.

Specimens of typography, in gold, silver, and colours, including a Roman missal, Thomas à Kempis, &c.

[The number of printing and lithographic establishments in Austria has considerably increased of late years. They amount in all to 400, of which 160 are found in Lombardy and Venice, and 65 in Vienna. The most extensive of these establishments are in Vienna and Prague. First on the list must be noted the Court and Government Printing-Office at Vienna. The type-founderies, usually in connection with the printing-offices, not only cover the home demand, but also obtain a brisk though small foreign trade.]

368 ARNETH, JOSEPH, Director of the Imp. Numismatic
and Antiquarian Cabinet, *Vienna.*

A work on gold and silver monuments, by the exhibitor (as a sample of the process of copper-plate engraving in Vienna).

368A KATSER, JOSEF FRANZ, *Gratz, Styria*—
Lithographer.

A variety of maps.

369 RAUH, JOHANN, *Vienna*—Lithographic Printer.

An album, containing lithographic copies from original drawings by Vienna artists.

Specimens of the various styles of lithography and printing.

370 BERMANN, JOSEF, *Vienna*—Publisher.

Lithographs:—

Views on the banks of the Danube.

The Austrian armies during the course of two centuries. (40 prints.)

The Austrian army in 1849 (8 prints).

Statistical maps of Austria.

371 MECHETTI, PIETRO (late CARLO MECHETTI),
Vienna—Publisher.

Portraits drawn from nature, by Krichuber.

Music composed by Dessauer, Spohr, Willmers, Strauss, &c.

372 MÜLLER, H. F., *Vienna*—Publisher.

Freijer's map of Carniola.

Illustrations to the History of Austria, by Professor Geiger.

Album of the Vienna artists.

Album of waltzes and national melodies.

373 NEUMANN, T. L., *Vienna*—Publisher.

Lithographs:—Portraits, battle scenes, &c.

Album, containing views of Vienna.

374 STEIGER, J. GEORG, *Vienna*—Manufacturer.

Playing-cards, of four sorts, exhibited in a frame.

The frame by Jos. Griller, of Vienna. The metal ornaments by Gottschalk and Lamasch, Vienna.

[To this branch of industry belongs also the manufacture of coloured and embossed papers, playing cards, paper-hangings, pasteboard, and papier maché ware. Almost the entire production of these several articles, with the exception of the last, belongs to Vienna. Lombardy alone has established a few paper-hanging factories. The Vienna articles are excellent. As to the manufactures in papier maché, those of Bohemia are the best; those of Vienna the most elegant.]

374A GREINER, M., *Vienna*—Calligraphist.

A Lord's Prayer, and three other specimens of calligraphy.

375 SCHÜTZ, FRANZ, *Vienna*—Calligraphist.

A calligraphic tableau.

- 376 HABENICHT, AUGUST, *Vienna*—Dressing-case Maker.
Ladies' toilet-table, with ivory ornaments.
A painter's easel.
Fancy articles of leather, portfolios, cassetts, pockets, ladies' and gentlemen's companions, travelling medicine chests, cigar-boxes, portmonnaies, lucifer-match boxes, &c.
- 377 STIASNY, WILHELM, *Prague, Bohemia*—Bookbinder.
A bill case gilt.
An album with the view of the royal castle and cathedral at Prague.
Papeterie in brown velvet, with gold strings.
- 378 RENEL, A., *Vienna*—Manufacturer.
Fancy-ware of wood and paper; paper baskets; screens; letter-weight; tableau.
Samples of stamped-paper ornaments.
- 379 JOHNE & THIELE, *Vienna*—Manufacturers.
Pasteboard ware: caskets, watch-stands, pin-cushions, goblets, &c.
Stone pasteboard ware: cups, baskets, caskets, watch-stands, pin-cushions, &c.
- 380 BERGER, C. H., *Vienna*—Manufacturer.
Wafers of paper and gelatine, of different kinds.
- 381 HARDTMUTH, L. & C., *Budweis and Vienna*—Manufacturers.
Black-lead and red-chalk pencils of various kinds, and artificial slates.
- 382 GROHMANN, ADOLF, *Schönlinde, Bohemia*—Manufacturer.
Silk-lace, petinet, veils, &c.
- 383 MEINL'S HEIBS, A., *Baringen, near Carlsbad, Bohemia, and Vienna*—Manufacturers.
Silk-lace, woollen-lace, of different colours.
Embroideries, including pocket-handkerchiefs, ladies' dresses, collars, &c.
[The lace manufacture formerly provided a very important source of employment for the inhabitants of North Bohemia; but, by the discovery of the bobbin-net frame, the lace manufacture by hand has very much declined, and the number of the inhabitants of the mountain districts, who were once engaged in it, has now fallen from about 80,000 to 12,000. The cheapness of the articles produced, and the establishment of lace-making schools, whereby an improvement on the methods of manufacture could be learned, have infused, of late years, new life into this branch of industrial occupation, but without supplying any well-founded hope that they will suffice to restore it to its former flourishing condition. In Upper and Lower Austria, in Silesia, and in Carniola likewise, lace of ordinary kinds is still manufactured. Net, particularly in Vienna and Bohemia (more especially in the district of Eger), is largely produced, and veils at Milan.
The productions of the bobbin-net manufacture in Vienna, Bohemia, Moravia, the Vorarlberg, come in part directly into use, and in part are previously elaborated by lace-work and embroidery. Blonde embroidery is carried on in the Erzgebirg. Fine embroidery is executed chiefly in the Vorarlberg and also in Vienna.]
- 384 RÖLZ, S., *Graslitz, Bohemia*—Manufacturer.
Silk bayadere handkerchiefs.
Embroidered cambric pocket-handkerchiefs.
Embroidered cambric chemisettes.
- 385 SCHLICK, FRANZ, *Vienna*—Manufacturer.
A large assortment of silk-lace, petinet, and point-net-lace, bayaderes, handkerchiefs, veils, shawls, scarfs, &c.
- 386 BOSSI, JOSEF, *Vienna*—Manufacturer.
Cashmere and embroidered shawls and scarfs.
- 387 LAPORTA, H. F., *Vienna*—Manufacturer.
Embroidered scarfs and handkerchiefs.
Mantillas.
Scarfs.
Velvet and cashmere shawls.
- 388 BAUHOFFER, FRANZ, *Vienna*—Embroiderer.
The arms of England, embroidered with gold, silver, and silk.
- 389 BENKOWITS, MARIE, *Vienna*—Artistic Embroideress.
An embroidery of crape-thread on white gros de Naples, representing "Beneficence."
An embroidery of wool and silk, representing "the grave of the 10th battalion of Jägers."
- 390 FUSINATA, MARIA, *Belluno*.
An embroidered carpet.
- 390A SCHREIER, SUSANNA, *Vienna*—Manufacturer.
Specimens of knitting.
- 391 KRACH BROTHERS, *Prague, Bohemia*—Manufacturers.
A dress coat of peculiar workmanship.
A double coat, that can be worn on either side, made of a new material.
A coat made of woollen stuff, of peculiar cheapness.
Another made of a new woollen stuff.
- 392 SINGER, JOSEPH, *Pesth, Hungary*—Manufacturer.
Elastic dress-coat.
- 393 BUDINSKY, ANTON, *Reichenberg, Bohemia*—Manufacturer.
Hosiery, including ladies' and gentlemen's vests, trousers, caps, shoes, &c.
- 394 MALATINSZKY, EMERICH, *Miskolcz, Hungary*—Manufacturer.
Hungarian national dresses, called Szür.
- 395 RIGO, S., & KRAETSCHMAR, *Rima Szombath, Hungary*—Manufacturers.
Various Hungarian coats (guba).
Hungarian shooting jackets.
- 395A NESSEL, C., *Oedenburg, Hungary*—Tailor.
A coat and waistcoat.
- 396 OESTREICHER, D., *Mayk, Hungary*—Manufacturer.
A white and a grey Hungarian cloak (Guba).
Hungarian cloths (Hallina) and rugs.
- 397 SCHRAMM, SIMON, *Hermannstadt, Transylvania*—Weaver.
Long veils for the Roman national costume.
- 398 TRADE UNION, *Hermannstadt, Transylvania*.
Szelistjer rugs. A Szarika, belonging to the Wallachian national costume (produce of the domestic industry of the Wallachian peasantry).
- 399 SEITTER, ANTONIA, *Brünn, Moravia*—Manufacturer.
Caps of various countries, including Nisam, Megidic, Servian, and Polish.

400 RADMEISTER COMMUNITY (The Guild of Iron Masters), *Vorderberg, Styria*.
Soft pig iron, sparry iron ore, gangue stone, slags.
Bar iron, prepared for making blistered steel.

401 EGGER, COUNT GUSTAV, VON, *Knappenberg, Carinthia*.
Efflorescent pearl-spar (sparry iron ore) from Fleisch-
enstoll.
Heavy-spar (sulphate of baryta) from Andreaskreuz.
Efflorescent pearl-spar from Friedenbau, Andreaskreuz,
and Magarethenbau.
Crystallized sparry ore from Ferdinandistoll.
Fibrous sparry iron ore (hematite) from Andreaskreuz.
Calcedony with dendrites, on brown iron ore, from An-
dreaskreuz.
Pearl-spar, with rock crystal, from Andreaskreuz.
Crystallized calcareous spar on brown iron ore, from
Ferdinandistoll.
Crystallized sparry ore from Andreaskreuz.

[Austria stands in the first rank of continental countries in the production of iron, both as regards the quantity and quality of its ores, and the antiquity of its mines.

The iron productions of the Austrian empire may be divided into that of the Alpine countries (Styria, the Tyrol, Carniola, Upper and Lower Austria, and Lombardy); of the mountain districts of Bohemia, Moravia, and Silesia; and of the Carpathian countries (Hungary, Galicia, and Transylvania). The nature of the ore in Bohemia and Moravia, as also in the Carpathian countries, is more fit for the production of cast iron and articles made from the same, whilst the Alpine countries have mainly devoted themselves to the production of steel and wrought iron.

The Exhibition affords a comprehensive idea of this important department of Austrian industry. Almost every part of it is represented; Bohemia, Moravia, Styria, Lower Austria, the Tyrol, Carniola, and Carinthia, having sent specimens of their several iron productions, commencing with the raw produce in different stages of preparation; next follow the sheet iron and wires, and finally the finished manufactures.

The Austrian iron, and particularly the Austrian steel (called in England "Milan steel") is acknowledged to be of superior quality; in consequence of which so great a demand for the latter has been created abroad, that the manufacturers of scythes, among others, complain of want of material.

Hitherto charcoal has been mostly used in the iron works, but coals are beginning to take its place; and also all the new improvements in smelting and refining are being adopted.]

402 EGGER, COUNT GUSTAV VON, *Hüttenberg, Treibach, and Oberfellach, Carinthia*.
Pig iron, cast steel, brescia, and die steel.
Nails for the Levant.

403 RAUSCHER COMPANY, IRONWORKS, *St. Veit, Heft, and Mosinitz, Carinthia*.
Pieces of iron ore, white and refined scoriae and sheet-
iron.

404 CHRISTALNIGG'S, COUNT VON, MINING COMPANY, *Eberstein, Carinthia*.
Brown iron-stone.
Brown and heavy spar.
White cast-iron for making steel.
Fine metal for puddling.
Grey metal for casting.

405 ZOISO, WIDOW CARL, IRONWORKS, *Laibach, Carinthia*.
Iron ores, pig iron, bar iron, steel, and saw steel.

406 KOSSUCH, JOHANN, *Szinobánya, Hungary*.
Ankerit iron ore, raw, half, and entirely efflorescent, also roasted.
Samples of pig iron produced from these ores.

407 IMPERIAL SMELTING WORKS, *Pillersee and Zennbach, Tyrol*.
Refined steel, spring steel, and cast steel.
Cast-steel for scythe blades, refined steel and spring-
steel from Jenbach. Sparry iron ore.
Pig iron and steel from Pillersee.

408 DEPÔT OF THE IMPERIAL IRON MINES AND IRON WORKS, *Vienna*.
Various specimens of cast steel from different ores of Styria. Slags and scoriae of the same.
Specimens of sparry iron ore, with some from Mariazell.
Specimens of steel from Weyer: raw; chisel; polished and common shear; mill-steel, single, double, triple, and quadruple welded; and die, and Brescian triple-hardened.
Specimens of iron for hoops, tramroads, wheels, wall-nails, rails, &c.
Specimens of matrix, spring, tack, and angle iron.
Specimens of refined iron, puddled iron, sheet iron, pig iron, and cast iron of various sorts.

[To the Austrian monarchy, by far the most important of all the various branches of its mining wealth and industry is that of its iron, whether it be considered in reference to the extensive development it has already received, or the still more encouraging prospects of its future enlargement, which only requires proper care devoted to it, and the many mistakes which at present attend its management, to be abandoned. The pig iron of Austria is smelted in 257 blast furnaces; so that, on an average, more than 12,500 cwt. are the produce of each of these works annually. The cast iron is run, for the most part, direct from the blast furnaces into the moulds. Iron of the second casting is produced in thirty-seven cupola and nine reverberatory furnaces, and is less considerable in quantity. During the period from 1843 to 1847, the imports of iron ore and pig iron, including scrap iron, were, on an average, respectively 50,381 cwt. and 24,557 cwt., the exports of iron ore being 9,078 cwt. and of scrap iron 5,110 cwt. The production of malleable iron, including the amount yielded by all the various methods and processes applied to different kinds, and for securing different degrees of fineness, exceeds two million cwt. annually.

The production of steel amounts to 287,300 cwt.

The production of this quantity of steel requires the conversion of 368,000 cwt. of pig iron, still leaving upon the whole yield of the latter a surplus of 201,000 cwt. But from this surplus we must deduct 150,000 cwt., which are melted down in the cupola and reverberatory furnaces. The balance of trade in malleable iron and steel is in favour of Austria.

To the production of cast-iron by the blast furnaces, amounting to 443,871 cwt., must be added, as has been already observed, that from the cupola and the reverberatory furnaces. These work 150,000 cwt. of pig iron, and deliver about 136,000 cwt. of cast iron. Almost the whole of the malleable iron produced (amounting to 2,243,000 cwt.) must be retained for further manufacturing processes in Austria, seeing that the annual excess of exports over imports of this article is not more than 1,052 cwt. On

the other hand, the stock of steel remaining to the Austrian manufacturer was reduced to 201,000 cwt. by the excess of exports over imports, 86,350 cwt.]

- 409 EGGER, COUNT FERDINAND VON, *Lippitzbach, Carinthia*.
Puddled hoop, square, and rod iron.
Rolled steel for hand and machine saws.
Hard plate iron for cementing.
- 410 EGGER, COUNT F. VON, *Treibach, Carinthia*.
A selection of Brescian steel, including cast, accialon, fir, and scythe steel.
- 411 TÖPPER, ANDREAS, *Scheibbs, Lower Austria*.
Hoop and rod iron. Sheet-iron.
Ship, tender-roofing, and tubing sheet-iron.
Welded tubes for manometers, and water and gas pipes.
- 412 FORSTENBERG, PRINCE, *Althütten, Neuhütten, Rostok and Neujoachimsthal, Bohemia*.
Various samples of wrought and stretched iron, round and flat-angle iron, carriage-spring iron, ploughshares, spring-iron, sheet-iron for boilers, wrought lathe-spindles. Several cast-iron stoves and monuments.
Colossal crucifix, chains, bedstead, balcony, &c.
- 413 METTERNICH, PRINCE, *Plas, Bohemia*.
Cast-iron stove decorated with hunting subjects.
- 414 BOUQUOI, COUNT, *Kallich Foundry, Bohemia*.
Hoop-iron, round bar-iron, sheet-iron, &c.
- 415 ANDRASSY, COUNT GEORG, *Dernö, Hungary*.
Hoop-iron stretched by charcoal-gas loops.
- 416 GURK CHAPTER'S FOUNDRY, *St. Magdalena, Carinthia*.
Various kinds of steel:—Brescia steel. Steel for files and scythes.
[Of the different branches of this department of metal manufactures, those that are conducted on a large scale seem to deserve most attention. Among these, the first that presents itself to notice is the manufacture of scythes, sickles, and chaff-cutters. The produce of 179 scythe factories was 4,000,000 of scythes, 1,600,000 sickles, and 90,000 chaff-cutters: these articles, on account of their excellent quality, have found their way into all parts of the world. The manufacture of pans, boilers, and kettles, carried on in 50 establishments, turns out 25,000 cwt. of articles. The manufacture of wire is of greater importance, and is carried on at 100 factories, producing about 80,000 cwt. The manufacture of nails is also very extensively carried on, and amounts to 50,000 cwt. The smaller workshops, appropriated to other manufactures in iron, produce files, knives, hatchets, shovels, sword-blades, gun-barrels, and various other articles, give employment to more than 60,000 persons (of whom about 15,000 are masters); and support 150,000 individuals, including the members of the families of those employed.]
- 417 SCHWARZENBERG, PRINCE, *Murau, Upper Styria*.
Paal steel, Brescian steel, Styrian steel, and hard iron.
Refined steel. Soft iron for blistered steel.
- 418 PFEIFFER, JOSEF, *Spitzenbach, Upper Styria*.
Shear Brescian steel.
Steel for scythes and mills.
- 419 THURNSCHELZ, COUNT GEORG VON, *Klagenfurt, Carinthia*.
Various kinds of steel and iron for nails.
- 420 FISCHER, ANTON, *St. Egidii, Lower Austria*.
Iron ore and pig iron. Spring steel.
Various samples of rolled bar iron.
An assortment of iron wire.
285 samples of files.
- 421 FISCHER, BERTH, *Traisen, Lower Austria*—
Manufacturer.
Various articles of cast steel, including spindles for spinning establishments, &c.
Articles of malleable cast iron, such as gun-locks; broken pieces, to show the grain, and its yielding nature.
- 422 LINDHEIM, H. D., *Josephphutte, near Plan, Bohemia*.
Railroad rails. Bar, hoop, and rod iron.
- 423 WÖLLERSDORF TIN PLATE WORKS, *Wöllersdorf, Lower Austria*.
Tinned sheet iron. Embossed and chased tin moulds.
- 424 KLEIST, BARON VON, *Neudeck, Bohemia*.
Gutter pipes. Thin sheet iron, called Sengler's iron post paper.
- 425 EGGER, COUNT F. VON, *Feistritz, Carinthia*.
Musical strings, cording, curry-comb, bed-springs, and pit-rope wires. Fine, middle, and ordinary wire.
- 426 FISCHER & WURM, *St. Egidii, Lower Austria*
—Patentees and Manufacturers.
Different descriptions of iron-wire rope.
- 427 EBERSTALLER & SCHINDLER, *Stadt Steyer, Upper Austria*—Manufacturers.
Ordinary and fine iron wire. Wire for musical strings. Saws.
- 428 HUEBER, FRANZ, *Josephsthal, Styria*.
Different kinds of iron and steel wire.
- 429 SCHEDL, CARL, *Wasserlug and Frauenthal, Lower Austria*.
Rolls of different kinds of iron wire. Steel wire.
Ordinary, middling, and fine wire. Spring wire.
- 430 SALM, PRINCE, *Blansko, Moravia*.
Ornamental bronzed street-lamp, designed by B. di Bernardis, in Vienna, represented in the engraving, p. 1032.
Cast-iron statue—Field-marshal Count Radetzky, modelled by Fernkerns.
Four cast-iron statues, representing heroes from the Nibelungen Lied, modelled by Fernkorn.
- 431 ALBRECHT, ARCHDUKE, *Trzietz, near Teschen, Silesia*.
Cast-iron pots and pans, with non-metallic enamelling.
- 432 BARTELMUS BROTHERS, & BERNHARDI, *Neu-Joachimsthal, Bohemia*—Manufacturers.
Cast-iron cooking apparatus, with non-metallic enamelling.
Horse-manger, &c.
- 433 PLEISCHL, ADOLPH, *Vienna*—Patentee and
Manufacturer.
Sheet-iron saucepans, boilers, and cups, with non-metallic enamelling.
- 434 KITSCHOLT, AUGUST, *Vienna*—Manufacturer.
Various metal articles, viz.:—A vase, a cross, and two candlesticks, cast in iron, from the drawings of F. Staiche, in Vienna.
Table, cast in zinc. This table, with the candlesticks, &c., is represented in the Plate.
Flower-vase of bronze, cast in one piece.



Ornamental Brass Street lamp. Designed by R. di Rossetti.

Toilet-table, fauteuils, and chairs of hollow wrought-iron tubes, with cast-iron ornaments. A group of these articles is represented in the Plate 163.

[The manufacture of articles in pewter, lead, copper, brass, pinchbeck, bell-metal, German silver, albatra, bronze, gilt, silvered and plated metals, has its principal seat in Vienna. They are either articles for use or ornament. The former, of copper, brass, &c., are very substantially made, and not only supply the home market, but are also extensively exported. The export trade of Vienna in gold and silver fancy articles has for some years been considerable, great taste having been combined with solidity. Also, the manufacture of cast and embossed articles of bronze, gilt, is flourishing, and gives employment to a large number of workpeople.]

435 EGGER, J. B., *Villach, Carinthia*—Manufacturer.

Roll of pressed leaden pipe, 1,800 feet long, in one piece, weighing 983 lbs.

Two pieces of pressed leaden pipes (tinned).

These leaden pipes are especially worthy of observation, on account of their great length, thinness, and equality. They can be made of any length.

436 HIRSCH, FRANZ, *Brünn, Moravia*.

Articles in pewter, viz., church-lamp, tea service, writing materials, chafing-dish, cooking vessel (a novelty).

Samples of ornaments and letters.

437 WAGNER, FRANZ, *Prague*—Manufacturer.

Strong box of polished steel, weighing 270 lbs.

438 BEITL, FRANZ, *Prague*—Manufacturer.

Two iron strong boxes, weight 360 lbs. and 483 lbs.

439 DIETRICH, JOSEPH, BARON, *Spital-on-the-Semmering, Styria*—Manufacturer.

An assortment of Russian scythes.

[The importance of these articles, as well as the prominent position of the manufacture of them in Austria, is generally known. The Austrian scythe and sickle find their way into almost every country in Europe, and also across the Atlantic. The reason of this is to be found in the excellence of the material, the lowness of price, and the care with which they have been made for centuries.

The principal seat of the manufacture is Upper and Lower Austria, Styria, and part of the Tyrol, which furnish nearly three-fourths of the whole number made.

Stadt Steyr, in Upper Austria, alone furnishes annually nearly two million scythes and sickles; and the whole production of 142 works in the monarchy (not including 34 scythe-factories in Lombardy) amounts to about seven million scythes, sickles, and straw-cutters.

Specimens are exhibited of various shapes and sizes used in the different countries.]

440 GATT, ALOIS, *Erd, near Kufstein, Tyrol*—Manufacturer.

A variety of scythes.

441 GRABER, JOSEPH, *Weer, Unterisenthal, Tyrol*—Manufacturer.

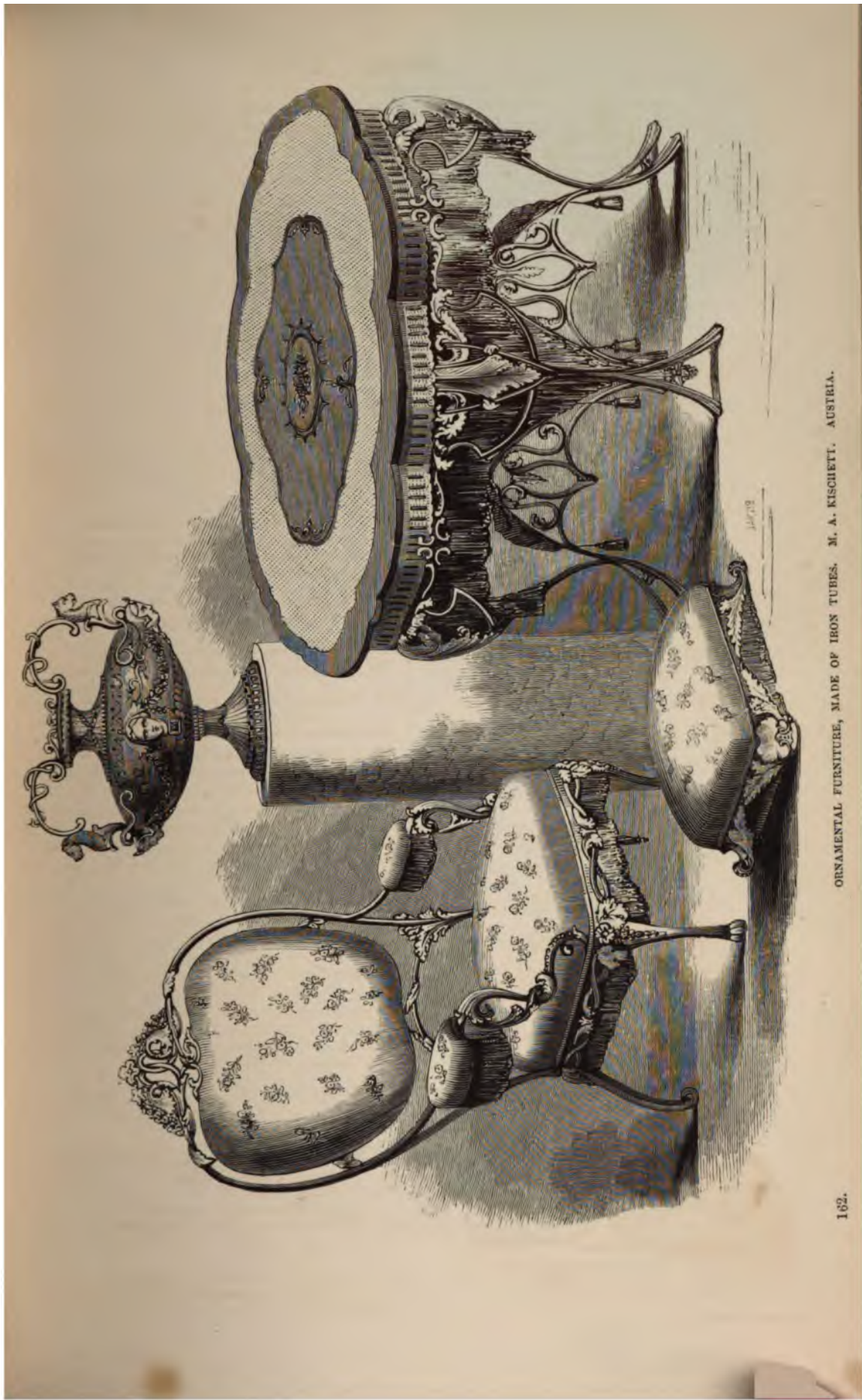
An assortment of scythes.

442 GRAUSS, JOHANN, *Füssen, Tyrol*—Manufacturer.

An assortment of scythes.

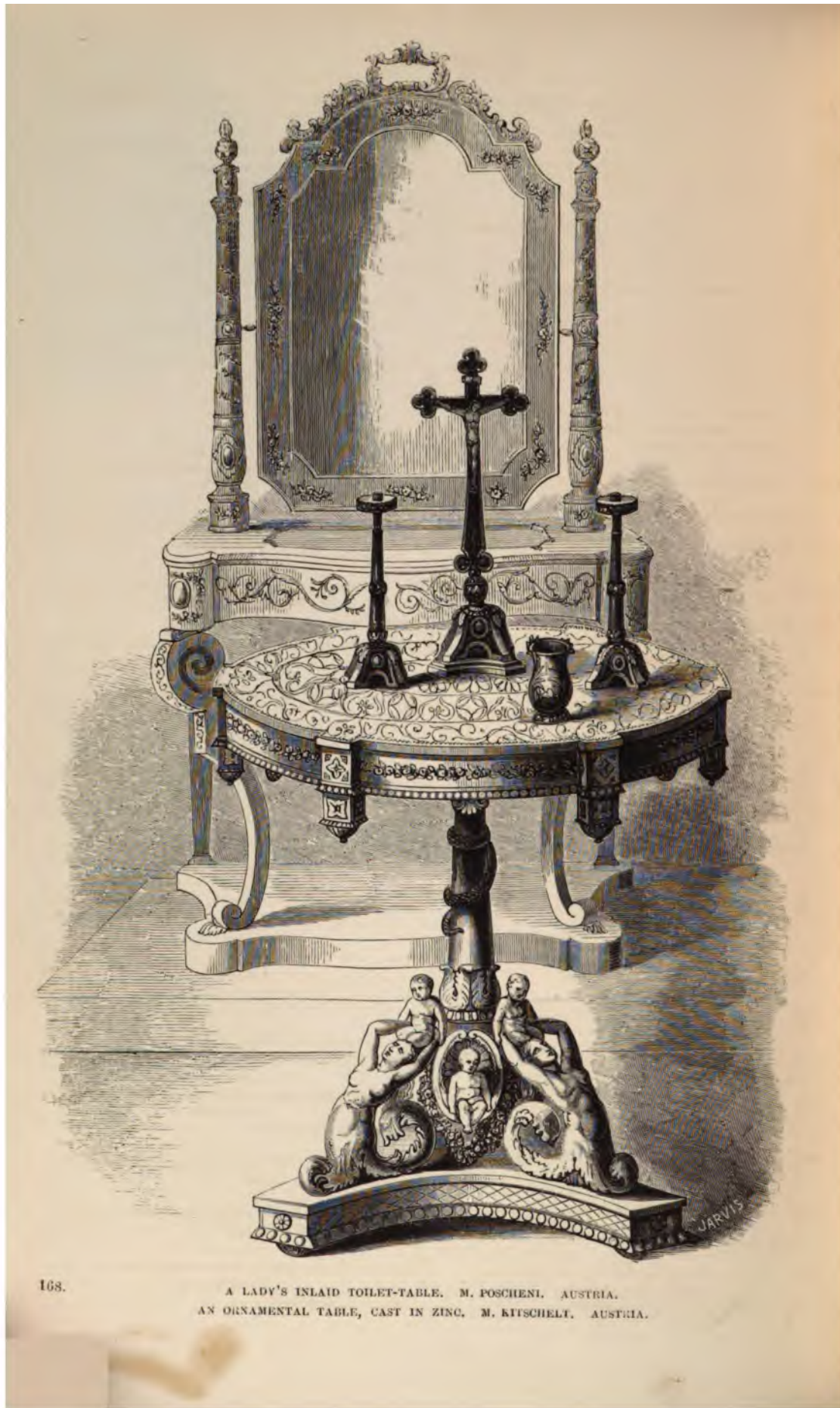
443 HYBENBERGER, GUTTLER, *Leonding, near Stadt Steyr, Upper Austria*—Manufacturer.

Various scythes.



ORNAMENTAL FURNITURE, MADE OF IRON TUBES. M. A. KISCHETTI. AUSTRIA.





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A LADY'S INLAID TOILET-TABLE. M. POSCHENI. AUSTRIA.
AN ORNAMENTAL TABLE, CAST IN ZINC, M. KITSCHULT. AUSTRIA.

- 444 OFFNER, J. M., *Wolfberg, Carinthia*—
Manufacturers.
Different kinds of scythes and sickles.
- 445 PAMER, SEBASTIAN, *Schalchen, near Mattighofen, Upper Austria*—Manufacturer.
Scythe and chaff-cutter of Styrian steel.
- 446 PENZ, JOHANN, *Mühlerau, in the Zillertal, Tyrol*—Manufacturer.
Different kinds of scythes.
- 447 PENZ, THOMAS, *Kleinboden, Tyrol*—Manufacturer.
An assortment of scythes.
- 448 WEINMEISTER, GOTTLIEB, *Spital-on-the-Pyhrn—Upper Austria*—Manufacturer.
Various scythes and sickles, of Innerberg, and cast steel.
- 449 WEINMEISTER, JOSEF, *Brühthal, near Leonstein, Upper Austria*—Manufacturer.
An assortment of scythes.
- 450 ZEITLINGER, JOSEPH, *Spital-on-the-Pyhrn, Upper Austria*—Manufacturer.
Different kinds of scythes.
- 451 ZEITLINGER, JOSEPH ALOIS, *Eppenstein, Styria*—Manufacturer.
Different kinds of scythes as used in East Prussia, France, and Saxony.
- 452 ZIMMERMANN'S HEIRS, BERTLINA, *Mairhofen in the Zillertal, Tyrol*—Manufacturer.
An assortment of scythes.
- 453 FELDBAUMER, PETER, *Trofajach, Styria*—Manufacturer.
Various kinds of pickaxes, hatchets, axes, shovels, hoes, &c.
- 454 LOBKOWITZ, PRINCE FERDINAND, *Mixnitz, Styria*.
Various kinds of shovels and hoes.
- 455 SCHMIDLEHNER, JOHANN, *Neuzeug, near Stadt Steyr*—Manufacturer.
Various hatchets.
- 456 DUBSKY, COUNT, *Lissitz, Moravia*.
Various kinds of iron-wire tacks, and ornamental wire tacks for decoration, &c.
- 457 ERNST, PETER, *Stadt Steyr, Upper Austria*—Manufacturer.
Tacks and brads (shoe-nails) assorted.
- 458 FALENT, MICHAEL, *Stadt Steyr*—Manufacturer.
Various kinds of forged nails.
- 459 LANDELL, LEOPOLD, *Stadt Steyr*—Manufacturer.
Iron nails of different kinds, made by machinery.
- 460 VINGERT, ANTON, *Stadt Steyr*—Manufacturer.
Tacks and brads (shoe-nails) assorted.
- 461 WEIDL, MICHAEL, *Stadt Steyr*—Manufacturer.
An assortment of nails, made by machinery.
- 462 HALLER, ALOYS, *Neuzeug, near Stadt Steyr*—Manufacturer.
Brass rings of different kinds.
- 463 KRANOWITZER, JOSEF, *Neuzeug, near Stadt Steyr*—Manufacturer.
Pinchbeck rings of different kinds.
- 464 POIGER, FRIEDRICH, *Stadt Steyr*—Manufacturer.
German-silver rings of different kinds.
- 465 KURZ, CARL, *Stadt Steyr*—Manufacturer.
Snaffle, curb, and buckles for horses.
- 466 KOLLER, FRANZ, *Steinbach, near Stadt Steyr*—Manufacturer.
Curry-combs of different kinds.
- 467 MITTERBERGER, JOHANN, *Sierninghofen, near Stadt Steyr*.
Shoe tips and heels.
- 468 RING, JOSEPH, *Neuzeug, near Stadt Steyr*—Manufacturer.
Steels for striking lights, of different kinds.
- 469 GRABNER, FRANZ, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps, of brass and iron.
- 470 SCHWARZ, CARL, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.
- 471 SCHWARZ, FRANZ, senior, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.
- 472 SCHWARZ, FRANZ, junior, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.
- 473 SCHWARZ, IGNATZ, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.
- 474 BLUMAUER, WILHELM, *Stadt Steyr*—Manufacturer.
Bells for horses, of different kinds.
- 475 TOMASCHITZ, JOSEPH, *Veldes, Upper Carniola*—Manufacturer.
Bells of various kinds for cattle; used among the Alpine agriculturists of Tyrol, Styria, Carinthia, and Carniola.
- 476 PFLEIDEBER, JOHANN, *Stadt Steyr*—Manufacturer.
Scales (balances) of brass.
- 477 STRUNZ'S WIDOW, JOSEPH, *Vienna*—Manufacturer.
Samples of pins, needles, and buckles.
- 478 CASSEL, JOHANN, *Vienna*—Manufacturer.
Shot-bags, powder-flasks, powder-measure, percussion-cap cases, hunting-pipe, fox-traps, lucifer-match-boxes, travelling lucifer-match-boxes, writing utensils, &c.
- 479 BUCHBERGER, JOSEF, *Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 480 DERFLEB, JOHANN, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 481 DILTSCH, JOHANN, *Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 482 HAUSER, JOSEF, *Stadt Steyr*—Manufacturer.
Gimlets of different kinds.
- 483 KETTENHÜBER, JOSEF, *Stadt Steyr*—Manufacturer.
Awls of different kinds.

- 484 KOLM, JOHANN, *Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 485 METZ, GEORG, *Stadt Steyr*—Manufacturer.
Gimlets of different kinds.
- 486 MOLTERER, CAJETAN, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 487 MOLTERER, CHRISOSTOMUS, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 488 MOLTERER, GEORG, *Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 490 MOLTERER, MATHIAS, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls for shoemakers and saddlers.
- 491 MOLTERER, VINCENZ, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 492 NOTHAFT, FRANZ, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.
- 493 REINDL, JOHANN, *Stadt Steyr*—Manufacturer.
Gimlets of different kinds.
- 494 TEUFMAYER, CARL, *Stadt Steyr*—Manufacturer.
A vice, screw-stock, dies, and taps.
- 495 BEYER, ANTON, *Stadt Steyr*—Manufacturer.
An assortment of files and rasps.
- 496 LECHNER, MATHIAS, *Stadt Steyr*—Manufacturer.
Files and rasps of different kinds.
- 497 NUSSBAUMER, LEOPOLD, *Stadt Steyr*—Manufacturer.
Files and rasps.
- 498 PREITLER, MATHIAS, *Stadt Steyr*—Manufacturer.
Files and rasps of different kinds.
- 499 REICHL, JOSEF, *Stadt Steyr*—Manufacturer.
Files of different kinds.
- 500 SONNLEITHNER, ANTON, *Stadt Steyr*—Manufacturer.
Files and rasps of different kinds.
- 501 UNZEITIG, FRANZ, *Stadt Steyr*—Manufacturer.
Files and rasps of various kinds.
- 501A FISCHER, GEORG, *Hainfeld, Lower Austria*—Manufacturer.
Files and crucibles.
- 502 VATER, FRANZ, *Neuzeug, near Stadt Steyr*—Manufacturer.
Files of different kinds.
- 503 ALSTERBERGER, JOHANN, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

[The manufacture of cutlery in Austria has its principal seat in Stadt Steyr, Upper Austria, and its neighbourhood. Not only the great extent and importance of the manufacture, but, above all, the excellent quality of the article and the extraordinarily low price, have brought the cutlery of Stadt Steyr into almost universal use through-

out the monarchy, and made all competition in the lower and middling kinds of table knives and forks and pocket knives almost impossible.

The wares universally known under the name of "Steyr Cutlery" are not produced by large manufacturing establishments, but principally by small master cutlers; and the division of labour, with respect to the handles, rivets, and blades, has been in practice for many years. A series of specimens of those knives and forks which are principally in demand is exhibited, and attention must be drawn more to the quality and cheapness of the articles than to their finish.

The manufacture has greatly increased, particularly in the past year.

Of fine cutlery, specimens are exhibited from some establishments in Steyr, as well as from Nixdorf, Bohemia. Stadt Steyr also produces weapons, &c., on a large scale, and some samples are exhibited.

Finer kinds of cutting tools are made in Vienna, Linz, and other towns in large quantities.]

- 504 BAUER, JOSEF, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.
- 505 BLEY, JACOB, *Stadt Steyr*—Manufacturer.
Razors of different kinds.
- 506 BREHLMAYER, JOSEF, *Stadt Steyr*—Manufacturer.
Razors of different kinds.
- 507 BUBENITSEK, JOSEF, *Hermannstadt, Transylvania*—Manufacturer.
Garden knives, &c.
- 508 DAUCHER, STEFAN, *Untergrünburg, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 509 DERNBERGER, FRANZ, *Grünburg, near Stadt Steyr*—Manufacturer.
Garden knives of different kinds.
- 510 DIETZL, MATHIAS, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives and forks of different kinds.
- 511 DOPPLER, ADAM, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 512 FÖRSTER, LEOPOLD, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 513 FRENKNER, ANTON, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 514 FRÖHLICH, CARL, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.
- 515 FRÖHLICH, JOHANN, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.
- 516 GRÜNWALD, JOSEF, *Neuzeug, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 517 HAINDL, ANTON, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

- 518 HELM, ALOYS, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 519 HOFER, PHILIPP, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 520 KALTENMARK, PETER, *Leinz, Upper Austria*,—Manufacturer.
Razors, and an assortment of knives and scissors.
- 521 KEBBLER, JOSEF, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives and forks of different kinds.
- 522 KRANAWITZER, JOHANN, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of various kinds.
- 523 LICHTL, JOHANN, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 524 LIEDKE, FRIEDRICH, *Stadt Steyr*—Manufacturer.
Dessert knives and forks of different kinds.
- 525 LÖSCHENKOHL, CARL, *Frattbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 526 LÖSCHENKOHL, JOHANN, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.
- 527 MADERBAECK, MICHAEL, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.
- 528 MILLER, ROMUALD, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.
- OSEP, Sen., *Stadt Steyr*—Manufacturer.
Lance, hangers, hunting knives, and swords of different kinds.
- 530 MITTER, JOSEF, *Stadt Steyr*—Manufacturer.
Knives, razors, and scissors of different kinds.
- 531 MOSEB, ANTON, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.
- 532 MOSEB, ANTON, *Steinbach, near Stadt Steyr*—Manufacturer.
Penknives of different kinds.
- 533 MOSEB, CARL, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 534 MOSEB, FRANZ, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 535 MOSEB, GEORG, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.
- 536 MOSEB, JOSEF, *Steinbach, near Stadt Steyr*—Manufacturer.
An assortment of knives.
- 537 MOSEB, JOHANN, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 538 OSTERBERGER, LEOPOLD, *Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 539 PICHLER, JOHANN, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 540 PILS, CARL, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 541 PILSS, FRANZ, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 542 PILSS, GOTTFRIED, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.
- 543 PILSS, MICHAEL, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 544 PESSL, GOTTLIEB, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 545 PICHLER, JOHANN, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 546 PFÜSTERSCHMIDT, JOHANN, *Neuzeug, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 547 RAPP, MATHIAS, *Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 548 RESSL, JACOB, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of various kinds.
- 549 RESSL, MATHIAS, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 550 RIEDLER, JOHANN, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 551 RIEDLER, LEOPOLD, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 552 RÖSLER, IGNAZ, *Nirdorf, Bohemia*.
An extensive assortment of razors, knives, and scissors, toothpicks, &c.
- 553 RUPPRECHT, SEBASTIAN, *Stadt Steyr*—Manufacturer.
Razors of different kinds.
- 554 SALZWIMMER, PHILIPP, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.
- 555 SCHINDLER, SIMON, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.
- 556 SCHWINGHAMMER, SIMON THADD, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket knives of various kinds.
- 557 STIERHOFER, ALOIS, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

- 558 STIERL, JOSEF, jun., *Stadt Steyr*—Manufacturer.
Scissors of different kinds.
- 559 STUCKHART, JOHANN, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 560 VOITE, ALOIS, *Sierminghofen, near Stadt Steyr*—Manufacturer.
Cutlery of different kinds.
- 561 WACHTER, LEOPOLD, *Stadt Steyr*—Manufacturer.
Razors of different kinds.
- 562 WEICHSILBAUMER, JOSEF, *Neumarkt, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.
- 563 WEICHSILBAUMER, MICHAEL, *Sierminghofen, near Stadt Steyr*—Manufacturer.
Knives of various kinds.
- 564 TRUPLMAYER, JOSEF, *Unters Hummel, near Stadt Steyr*—Manufacturer.
A variety of surgical instruments.
- 566 BACHNER, FRANZ, *Stadt Steyr*—Manufacturer.
An assortment of shoemakers' tools.
- 567 GROSSAUER, ALOIS, *Stadt Steyr*—Manufacturer.
A variety of shoemakers' tools.
- 568 GROSSAUER, FRANZ, *Stadt Steyr*—Manufacturer.
An assortment of shoemaker's tools.
- 569 KLEMENT, FRANZ, *Stadt Steyr*—Manufacturer.
An assortment of tools of steel, for cabinet-makers, carriage builders, furriers, turners, &c.
- 570 SAILER, JOSEF, *Stadt Steyr*—Manufacturer.
Various tools for coachmakers, furriers, &c.
- 571 WELZBACH, KASPAR, *Stadt Steyr*—Manufacturer.
Tools for coachmakers, comb-makers, furriers, cabinet-makers, &c.
- 572 WEISS, JOHANN, & SON, *Vienna*—Manufacturer.
Assortment of cabinet-makers', coopers', and carriage-makers' tools. Rosewood tool chest for amateurs, &c.
- 573 WERTHEIM, FRANZ, *Vienna and Scheibbs, Lower Austria*—Manufacturer.
An extensive variety of cabinet-makers', coopers', carriage-makers', leather-dressers', and turners' tools.
- 574 BRUNNER, ANTON, *Vienna*—Manufacturer.
Samples of compass saws, &c.
- 575 BAECHEK, A. B., *Vienna*—Manufacturer.
Embossed silver ware: cups, goblets, salt-cellars, bread-baskets, oil and vinegar cruets, sets of knives, forks, and spoons; inkstands, &c.

[The paucity of works of this description sent to the Exhibition, which are, however, produced of very superior quality, in Vienna, Prague, Milan, and Venice, is probably a consequence of the political events and disturbances of the last few years.

The jewellery, gold and silver embossed and stamped articles of Vienna, enjoy a high reputation and considerable sale at home and abroad. The manufacture of gold

articles on an extensive scale, originated in Prague; its gold and silver snuff-boxes having been everywhere approved of. The stamped silver articles of Vienna and Prague have met with great success. The manufacture of gold and silver wire alone gives employment in Vienna to a great number of men.]

- 576 GROHMANN, HERMANN, *Prague*—Manufacturer.
Gold trinkets; silver filigree casket, ornamented with large Bohemian garnets.
Bracelets and necklace of Bohemian garnets.
- 577 RATZERSDORFER, H., *Vienna*—Manufacturer.
A toilet glass in a massive wrought and embossed silver frame, weighing 135 ounces.
- 578 WIEB, LÖB, *Prague*—Manufacturer.
Silver filigree chessboard and men.
- 579 BERG, FRANZ, *Prague*—Manufacturer.
Knight with horse in bronze; animals fighting—a group in or-molu; pair of or-molu candelabra; crystal goblets; table lamp.
- 580 BRÜCK, WILHELM, *Vienna*—Manufacturer.
A pair of or-molu candelabra, ornamented with porcelain.
- 581 HOLLEBRACH, D., *Vienna*—Manufacturer.
Pair of or-molu candelabra.
- 582 ABEL, FRED., *Neuburkenthal, Bohemia*—Manufacturer.
A chimney-glass, cut in facets, 88 inches high, 43 inches wide, in gold frame.
[The principal seat of the glass and mirror manufacture is Bohemia, which supplies more than half of the entire production of the whole empire.
The Bohemian set and unset coloured glass in imitation of precious stones for ornaments, &c., is equally an important article of exportation. Styria, Illyria, and Hungary, have likewise glass manufactories.
The articles exhibited will give a sufficient idea of the Austrian glass manufacture, and show its excellence. Some specimens of mirrors, blown and cut in facets, are remarkable on account of their great size and purity.]
- 584 BTQTOY, COUNT, *Schwarzthal and Silberberg, Bohemia*—Manufacturer.
Flower vases and inkstands of red hyalite glass.
Etrurian vases, flower vases, pen trays, and paper-weights of wavy hyalite glass.
Vases, dinner service, jugs of ruby glass, flagons of chrome-green glass, bottles, coffee-cups, flower glasses, goblets of white and enamelled porcelain glass.
A variety of crystal, cut, plain, and blown glass articles.
- 585 CZERMAK, P., *Prague*—Manufacturer.
Glass ware: flower and chimney vases, fruit dishes, bottles and flagons, sugar-basins, toilet bottles, &c.
- 586 GROHMANN, JOSEF, *Kreibitz, Bohemia*—Manufacturer.
Glass ware: alabaster flower vases and cornucopia, centre-piece, flagons with gold ornaments, candlesticks.
- 587 HARRACH, FRANZ ERNST, COUNT VON, *Neuwelt, Bohemia*—Manufacturer.
A large assortment of glass ware: vases, jugs, flagons, decanters.
Wine bottles, scent bottles, goblets, cups.
Large candelabra, lustres, articles for the toilet, &c.
[The manufacture of glass is one of the most ancient and widely diffused branches of industry subsisting in



SPECIMENS OF ORNAMENTAL GLASS. M. HOFFMAN. PRAQUE.

Bohemia, which has long carried on an extensive trade in glass and glass ware with all parts of the world. She still occupies the first rank among the provinces for the manufacture of glass and mirrors, and in the extent of production and excellence of the article surpasses all of them put together. In the year 1847, there were exported of hollow and table glass, 102,119 cwt.; cut and cast crystal glass and mirrors, 23,075 cwt.; beads, artificial gems, &c., 1,619 cwt. Of these exports, amounting to 130,813 cwt., the share contributed by Bohemia was, in the first of the above-named classes of productions, 91,047 cwt.; in the second ditto, 19,022 cwt.; in the third ditto, 5,224 cwt.: so that altogether 115,293 cwt. of articles, 88 per cent. of the entire aggregate of exports, and 87 per cent. of the entire value, represent the share of Bohemia. The glass and mirrors produced in Bohemia are estimated at more than double the sum of her foreign exports, since they amount to, at least, 220,000 cwt. Considerable sales of these very valuable manufactures are made to other provinces of the empire.

Next to Bohemia we may take the Venetian Provinces, celebrated for the beads of many kinds that they make, and which are partly cut in Bohemia.

Besides these provinces, only Lower Austria, Lombardy, and Upper Austria produce glass wares of the finer kinds, and these but in small quantities; for although they are exported to some little extent by Upper and Lower Austria, these countries do not produce them in quantities sufficient to meet the demands of their whole population. Other provinces limit their efforts to the production of ordinary descriptions of glass only, and are supplied with the finer sorts from Bohemia.

From a collation of the results for the whole Austrian monarchy, it appears that the glass trade produces annually 420,000 cwt. of glass ware and mirrors.

The careful adoption of the latest discoveries or processes, her richness in the raw materials entering into the production of glass, and the cheapness of its articles, have secured to Bohemia a most extensive foreign market for her wares, and up to the present time she has had no competitor to fear in this class of productions. The manufactures of the other provinces take those of Bohemia for their model, and are now making rapid progress in the development of their improved capacity and resources.]

588 HEGENBARTH, AUGUST, *Meistersdorf, Bohemia*—
Manufacturer.

Various glass drinking-cups.

589 HELMICH, F. A., *Wolfersdorf, Bohemia*—
Manufacturer.

Specimens of glass beads, knitting pearls, and scent bottles; the latter in alabaster, beryl, and turquoise.

Specimens of vases, cake-plates, butter-coolers, caskets, candlesticks, decanters, sugar-basins, &c., in alabaster, of various colours and designs.

589A HOTTINGER, ADOLPH, *Vienna*—Manufacturer.
Vases of crystal glass, cut.

590 HOFMANN, WILHELM, *Prague*—Manufacturer.
(Agents, J. & R. McCracken, 7 Old Jewry, London.)

Pair of colossal vases of alabaster and dim green glass, cut. Vases of opal, alabaster, or crystal glass cut, painted or enamelled. Smelling-bottles, jugs, cups, flower-glasses, candlesticks, boxes, beer-glasses, of similar manufacture.

Vases in various styles, cut. Bottles with glass and tray, jugs, German cups, water-sets, eau-sucrée. sets, &c.

Several of these articles are represented in the accompanying Plates 57, 171, &c.

591 JANKE BROTHERS, *Blottendorf, Bohemia*—
Manufacturers.

Glass ware: flower vases, goblets, centre-pieces, flagons, decanters, alabaster flasks, crystal candlesticks, &c.

592 KITTL'S HEIRS, ANT., *Kreibitz, Bohemia*—Manu-
facturers. (Agent, William Meyerstein, 15 Wat-
ling Street, London.)

Different kinds of glass; flower vases with various ornaments.

593 KUHINKA, FRANZ, *Katharinenthal, Hungary*—
Manufacturer.

Goblets, decanters, national cups, liqueur glasses, &c.

594 LÖTZ, WIDOW, & GERSTNER, *Deffernik, Bohemia*,
—Manufacturers.

Glass centre-pieces, flower vases, flagons, jugs, and cups, tea and wine services, &c.

Wine and liqueur decanters, glasses, scent-bottles, &c.

595 MEYER'S NEPHEWS, *Adolf and Leonorenhain,*
Bohemia—Manufacturers.

Glass flower vases, pitchers, epergnes, &c., of various kinds and sizes.

Centre-pieces, candelabra, sugar-basins, jewel stands, flagons, milk jugs, jugs, candlesticks, decanters, &c. Several of these articles are represented in the accompanying Plate.

596 KÖNIG, FRANZ PALLME, *Steinschönau, Bohemia*—
Manufacturer.

Glass centre-piece, fruit dishes, sugar basins, dessert plates, crystal vases, decanters, a punch-bowl, antique-shaped chalice, &c.

597 PELIKAN, IGNATZ, *Meistersdorf, Bohemia*—
Manufacturer.

Glass goblets with covers, engraved and painted.

598 VIVAT, BENEDICT, *Langerswald and Benedictthal,*
Styria—Manufacturer.

Assortment of articles of crystal glass, vases, decanters, goblets, bottles, knife-rests, &c.

Various coloured, cut, engraved, embossed, and gilt glasses.

599 ZAHN, JOSEF, sen., *Steinschönau, Bohemia*—
Manufacturer.

A centre-piece, glass goblets, flower vases, flagons, &c.

600 BIGAGLIA, PIETRO (late LORENZO BIGAGLIA),
Venice—Manufacturer. (Agents, Fordati, Cox-
head, & Co., 13 Old Jewry Chambers, London.)

Specimens of glass and enamelled beads. Imitation marbles in a variety of colours. Block of unwrought aventurine, 167 lbs. Ladies' ornaments, inkstands, knife and fork handles, paper weights, dice, snuff-boxes, cigar-holders, &c. Picture in mosaic, with a view of the mole of Venice. Gothic window of round filigree. Bottles and glasses in enamelled filigree. Various fancy articles in aventurine.

A Moor. Vases in various colours, in aventurine. A variety of glasses, smelling bottles, flower glasses, egg cups, tazzas, cakes, plates, eye glasses, &c.

601 BLASCHKA & SONS, *Liebenau, Bohemia*—
Manufacturers.

Paste, for artificial precious stones, beads, glass buttons, lustre pendants, articles in pinchbeck, &c.

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FRANKE, JOSEF, *Kamnitz, Bohemia*—
Manufacturer.

Various hair ornaments: breast-pins, brooches, and miscellaneous articles of glass.

603 PAZELT, ANTON, *Turnau, Bohemia*—Manufacturer.
Assortment of artificial stones of glass, cut.

604 PFEIFFER, FRANZ ANTON, *Neudorf, near Morcheustern, Bohemia*—Manufacturer.
Paste for artificial precious stones, of different colours and designs.

606 PFEIFFER, J., & Co., *Gablonz, Bohemia*—Manufacturers. (Agent, Oscar Frauenknecht, 80 Bishopsgate Street Within, London.)
Specimens of cut-glass buttons. Glass breast-pins and brooches. Artificial precious stones.

Beads, chandelier pendants, flagons, candle rosettes, knife-rests, letter-weights (*mille fiori*), and various toys in glass.

607 SARDER, PETER, *Gablonz, Bohemia*—Manufacturer.
Assortment of beads, glass buttons, chandelier pendants, and artificial precious stones.

Rings and ear-rings, breast-pins, pins, hair-pins, brooches, scent-bottles, flagons, &c.

Bracelets, necklaces, beads, drops, seals, &c.

608 SCHWEPFEL, ANTON, *Vienna*—Manufacturer.
Artificial human eyes of glass.

609 SPIETSCHKA, V., *Liebenau, Bohemia*—Manufacturer. (Agent, Charles Holland, 41 Finsbury Circus, London.)

Assortment of beads, pins, and hair ornaments of glass; bead necklaces; glass buttons and brooches; pinchbeck rings and ear-rings set with paste stones; artificial precious stones; chandelier drops.

Sample-book with drawings of chandelier drops, light rosettes, flagons, scent-bottles, &c.

610 MIESBACH, ALOIS, *Vienna and Pesth*—
Manufacturer.

Assortment of bricks, roofing-tiles, and draining-tiles of clay, from Inzersdorf, near Vienna, and Rákos, near Pesth.

Hollow bricks for building arches, made by machinery.

[This exhibitor has seven brick manufactories, giving direct employment to 4,880 persons, and producing annually 107 million bricks and tiles. His establishment at Inzersdorf on the Wiener Berg is the largest in the world: it covers 265 English acres, has 24,930 feet in length of drying sheds, 8,304 feet in length of moulding sheds, 446 moulding benches, 43 kilns capable of burning together 3,510,000 bricks at one time, five artesian wells, stabling for 300 horses, blacksmiths', carpenters', and wheelwrights' shops, besides an infant school for 120 children, and a hospital with 52 beds: it employs 2,890 persons, and turns out annually 65,500,000 bricks and tiles: 680 English acres of land supply a first-rate material for the manufacture, and contain sufficient for several centuries. The other six factories are provided on the same scale.]

611 PARTSCH, A., jun., *Theresienfeld, near Vienna*—
Manufacturer.

Various samples of clay tobacco-pipes.

612 BAHR & MARESCH, *Aussig on the Elbe, Bohemia*—
Manufacturers.

Syderolite ware:—Flower vases, baskets, figures, tea-cups, fruit-dishes, pier-tables, wall and table candle-

sticks, jugs, centre-pieces, pipe-bowls, paper-weights, busts, &c.

[The manufacture in Austria of pottery, syderolite ware, Wedgwood ware, terra cotta, bricks, &c., has made considerable progress within the last ten years, and has now become of importance. The exportation of earthenware, particularly *via* Trieste, has constantly increased. Bohemia takes the lead in this department.

Still more striking is the progress made by Bohemia in the manufacture of porcelain, in consequence of its coming into more extensive use. With solidity, purity, whiteness, and power of resisting sudden changes of temperature, the Austrian porcelain combines tastefulness of design and painting, and thus insures for itself an honourable place among the works of industry.]

613 HUFFZKY'S WIDOW, VINCEZ, *Hohenstein, near Toplitz, Bohemia*—Manufacturer.

Terralite-ware:—Flower-pots, centre-pieces, cups, milk-jugs, candlesticks, fruit baskets, dessert plates, &c. Russian monument.

[The quality of the articles manufactured in that description of earthenware which resembles the pottery called Wedgwood ware (syderolite, terralite, stone-clay), is constantly improving. An excellent raw material, supplied by a clay found in the vicinity of Wildstein, is principally used in the making of stone jars for mineral waters, and to a smaller extent also in that of utensils for various technical purposes.]

614 SCHILLER & GERBING, *Bodenbach, near Tetschen-on-the-Elbe, Bohemia*—Manufacturers.

Syderolite ware:—Centre-pieces, flower-vases, hunting and wine jugs, inkstands, butter dishes, tea and coffee services, letter-weights, busts, figures, &c.

615 IMPERIAL PORCELAIN MANUFACTORY, *Vienna*.

Letter-weights, groups, figures, of porcelain.

Vases, plates, dishes, sauce tureens and stands, punch-bowls, casseroles, compotiers, wine coolers, large vase and stand, fruit dishes, ice pail, letter-weights, inkstand, a table, coffee cups, groups, figures, paintings, &c.

616 BAGATTI-VALSECCI, PIETRO—*Milan*.

Enamel painting on glass, representing Lucia in Manzoni's "Promessi Sposi."

Painting on porcelain, representing "Rafael's studio," after Podesti.

Enamel paintings on metal, "Magdalene," "Madonna," and "Head of the Magdalene."

Painting on porcelain, "Madonna and Child, surrounded by a garland of flowers."

Painting on porcelain, "Valenzia Gradenigo before the Inquisitors," from Venetian history, after Hayer.

"An Odalisque," on porcelain.

"Madonna," on earthenware.

617 FISCHER, CHRISTIAN, *Pirkenhammer, Bohemia*—
Manufacturer.

A large assortment of dinner, tea, and coffee services, vases, toilet service, ink-stands, fruit-dishes, figures, &c., of porcelain.

618 FISCHER, MORITZ, *Herend, Hungary*—
Manufacturer.

Vases; dinner, tea, and coffee services; candlesticks, coffee-cups, &c., of porcelain.

619 HAAS, AUGUST, *Schlaggenwald, Bohemia*—
Manufacturer.

Vases, breakfast and dinner services, &c., of porcelain.

620 HADINGER BROTHERS, *Elbogen, Bohemia*—Manufacturers.

Dinner, coffee, and tea service, portable service, tea-caddy, coffee cups, bread-baskets, writing materials, milk-pots, vases, &c., of porcelain.
Chemical vessels of porcelain.

621 HARDTMUTH, LUDOVIG & CARL, *Budweis, Bohemia*—Manufacturers.

Dinner, coffee, and tea services, of stone-ware.
Earthenware vessels, for chemical manufactories.
[The manufacture of common crockery-ware is still, although extensive, very imperfect with respect to quality. It employs about 7,000 master potters.]

622 HUBNER, JOSEF, *Gablonz, Bohemia*.

Porcelain pipe-bowls, painted.
A painting, "Varus, the Roman general, throwing himself upon his sword in the Teutonic forest."

623 KRIEDEL & Co., *Prague*—Manufacturers.

Vases, dinner service, tea and coffee service, figures, busts, cups, inkstands, &c., of porcelain.

624 MINITZKE, COUNT STANISLAUS VON, *Frain, Moravia*—Manufacturer.

Vases, centre-pieces, coffee and tea-pots, plates, chamber candlesticks, &c., of stoneware.

625 NOWOTNY, AUGUST, *Alt-Rohlau, near Carlsbad, Bohemia*—Manufacturer.

Tea and coffee services of stoneware.
Vases, flower-pots, dinner and coffee sets, and figures, of porcelain.

[The manufacture of stoneware and delft is carried on to a considerable extent in Bohemia and Lower Austria, and partially in Moravia also.

In the manufacture of porcelain, the productions of the state factory at Vienna are pre-eminent in point of elegance of design and excellence of fabric and workmanship. They are worthy to be classed with the productions of Sevres. This branch of Austrian industry is more widely diffused throughout Bohemia than in the other provinces of the empire. The annual value of this manufacture exceeds one million and a quarter of florins.

Other branches of industry, more or less directly connected with it, such as the enamelling of the ware, the manufacture of crucibles, artificial stone, grindstones, stone and marble slabs, &c., yield articles that are included in the Wedgwood pottery.]

626 PORTHEIM, A. P., & SON, *Unter Kodaw, Bohemia*—Manufacturers.

Porcelain centre-piece and dinner service.
Tea and coffee services, bread-baskets, dessert plates, vases, and inkstands.
Assortment of figures, &c.

627 QUAST, JOHANN, *Prague*.

Painted china vase and plates.
A painted china slab, representing "The Last Judgment."

628 ZASCHE, JOHANN, *Vienna*—Painter.

Painting on porcelain, "Madonna," after Carlo Dolce.

629 BATKA, WENZEL, *Prague, Bohemia*—Manufacturer.

Two chests of drawers for apothecaries.

630 COLOMBO, GIOVANNI, *Milan*—Manufacturer.

A loo table, inlaid with tortoiseshell, gold, and silver.

631 GRÖGER, FRANZ, *Vienna*—Manufacturer.

Ebony cabinet, with statuettes in ivory (representing the Emperors of the House of Hapsburg), and ornaments in stone mosaic.

Work-box with malachite and ivory ornaments.

632 KNILL, JOHANN, *Vienna*—Manufacturer.

Billiard-table, with balls and cues.

633 LEISTLER, CARL, & SON, *Vienna*—Furniture and Inlaid Flooring Manufacturers.

The furniture and flooring for a suite of four rooms, viz. :—

Dining-room.—Zebra-wood dining table for forty persons, sideboard, and set of 36 chairs. Massive oak flooring.

Library.—A Gothic bookcase, of oak, presented to Her Majesty the Queen by His Majesty the Emperor of Austria. A bookcase of Austrian and Hungarian ash, in the Renaissance style. A table, 6 chairs, and easy chair, to match. Inlaid flooring.

Drawing-room.—Zebra-wood loo table, 6 ft. 3 in. in diameter; another, 8 ft. 10 in. do.; corner table, console table, 2 occasional tables, revolving picture stand, 2 easy chairs, and set of 4-arm and 8 other chairs. Massive oak flooring. Mahogany folding-door, leading to

Bed-room.—Zebra-wood bedstead with furniture, a prie-Dieu, 2 Italian cupboards, 2 stools, sofa, sofa-table, console table, carved flower stand, looking-glass frame, 2 easy chairs, and set of 8 chairs. Inlaid flooring.

Ante-room.—An oval table of walnut. Loo table of rosewood. Or-molu oval table. Two picture frames. Small crucifix.

The design for the Queen's bookcase was made by Mr. Bernardo di Bernardis, architect, assisted by Mr. Joseph Kranner, of Prague.

The rest of the furniture was designed solely by Mr. Bernardo di Bernardis.

The gimp, fringe, and tassels, were manufactured by Mr. Franz Huber, of Vienna.

Specimens of inlaid flooring, veneered and inlaid.

[One-third, or 35,307,000 Lower Austrian chains, of the entire soil of Austria, is covered with forests, which furnish yearly the quantity of 17,000,000 cubic cords (42,500,000 cords of Lower Austria) of wood of every description. The disproportionate excess of forest to the whole area of the soil in some provinces, combined with the diversity of the wages of labour, as well as of the means and facilities of transport or carriage prevailing in others, and, lastly, the irregularly distributed demand for wood for purposes of mining, of glass-houses, of stationary and locomotive engines, as well as of steam-vessels, are among the causes which have occasioned, on the one hand, the extraordinary difference in the price of wood to be remarked as between various localities in the monarchy, where it is largely consumed (a difference ranging in some instances even to 600 per cent.), and on the other hand have given rise to the necessity for importing wood for building purposes, and even for fuel, from abroad. These imports comprise, for the most part, the quantity required for the use of Lombardy, a province which, by the necessities of its geographical position, is compelled to draw its supplies of wood from Switzerland and Piedmont. Whilst the navigation of the Danube affords the means of easy transport of building timber and fuel down that stream, from South Germany, and especially of that large supply of firewood necessary for the Imperial capital, on the northern and eastern frontiers of the empire, the rivers Elbe, Oder, Vistula, Sereth, and Danube, afford so many channels for conveying away the wood and timber in which the frontier provinces are so rich. Although the great bulk of these exports was in rough wood, the exportation to the Danubian

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principalities of the planks produced in the Bukovina and in Transylvania, and of staves from the shores of Croatia, to Italy, France, and North America, constitutes a considerable element in their entire value.

The preparation of wood for agricultural and domestic utensils, for casks and the like ordinary uses, appertains usually to the smaller trades, and seldom forms the object of any traffic beyond that which is established by the demands of the locality itself. The manufacture, therefore, of such common wooden articles as are here alluded to, on an extended scale, may seem scarcely worthy of mention; and yet the yearly exports of common articles of wood, such as casks, shovels, rakes, wheelbarrows, agricultural and gardening tools, from 1843 to 1847, averaged a yearly value of 308,000 florins.

The finer works in wood are made, some of them, by certain of the larger manufacturers; but, for the most part, they constitute the employment of whole districts and valleys in the mountains. This sort of trade is widely spread over Bohemia, the Tyrol, and Upper Austria, and to some extent also in Hungary.

Architectural carpentry is carried on in the towns on a very considerable scale. Although several large establishments of this kind exist in the more populous parts of the empire, their productions are not calculated to meet more than the local demand for them. Within these very few years a factory has been established at Vienna to produce doors, lintels and window frames, &c., both by machinery and by hand, and being in connection with a factory of inlaid floorings and a furniture warehouse, forms a portion of the establishment of the present exhibitors.

The manufacture of inlaid and mosaic floorings has lately increased in an extraordinary degree. Vienna, Prague, Budweis, Plass, Dobrzisch, and also Dernes in Hungary, supply works of this kind in large quantities and of increasing perfection.

The following articles in this furniture are illustrated in the accompanying Plates 76, 87, 78, 54, 79, 84, 69, 74.

The material of much of this furniture is a beautiful zebra wood. The carving is extremely rich, bold, and massive. Much of the ornament is elaborated to a high degree, and of this the illustrations will assist to convey an idea. The state bed is ornamented with medallions in porcelain, and massive fringe and hangings. The chairs are also ornamented with fringe, tassels, and gimp. The sideboard has two fine candelabra, by Hollenbach, of Vienna, as its lateral ornaments.]

634 LECHNER, FRANZ, *Vienna*—Manufacturer.
Walnut-tree easy chair, stuffed and covered with Utrecht velvet.
Oak balzac, stuffed and covered to match.

635 MENTASTI-BELIA BROTHERS, *Milan*—Manufacturer.
Oblong square table, with inlaid work representing Napoleon crossing Mount St. Bernard.
A prie-Dieu, with inlaid work.
Various specimens of cornices in marble.

636 MOSCHINI, PAOLO, *Cremona*—Manufacturer.
A writing-desk and table.
A lady's toilet-table, covered with leather, and inlaid.
A small cabinet table. This table is represented in the Plate, together with an ornamental table and articles cast in zinc, belonging to a previous exhibitor.

637 PALHUEBER, VINZENZ, *Vienna*—Manufacturer.
Inlaid Gothic work-table, and a basket.

638 RIETSCH, F. G., *Bohmisch-Rudoletz, Moravia*—Inventor.
Model of a ship-table. Provisionally registered.

638A SPELUZZI, —, *Milan*.
Mosaic table.

639 ROSANI BROTHERS, *Brescia*—Manufacturer.
A secretaire and a small oblong table, of American maple, with inlaid and mosaic work.

640 STAUDINGER, ANTON, *Vienna*—Manufacturer.
Furniture: Buhl table of rosewood, book-shelves, sofa, chairs, &c.

[Cabinet-making and the manufacture of furniture flourish in Vienna, Prague, and Milan, above all other towns of the monarchy. The perfection of these works of cabinet-making, and the comparatively low prices demanded, not only ensure for them the command of the entire home market of the monarchy, but are already establishing a large export trade.

The manufacture of buhl and other fancy articles constitutes a special branch of industry in Milan, and, under the name of "Intarsatura," has been carried on there for centuries. These articles, as well as the Vienna turnery and gilt carving, are of an excellent description, and are also exported to great advantage.]

641 THONET, MICHAEL, *Vienna*—Manufacturer.
Furniture:—Sofas. Easy chairs. Arm-chairs.
Stand of rosewood and walnut wood.
Specimens of inlaid floorings.
A small round table of rosewood. The above are variously inlaid with metal, tortoise-shell, and mother-of-pearl.

642 KLANNER, FRANZ, *Vienna*—Manufacturer.
Different kinds of fancy cabinet-work.
Tea-caddies, sugar-caddies, work-boxes, reading-desks, travelling looking-glasses, candle-screens, &c.

643 BECKER & KRONIK, *Vienna*—Manufacturers.
Screen of japanned wood.
Fire-screen covered with papier-maché.
Papier-maché tables and cups.
Cups of japanned tin.
Two vases, designed by M. de Bernardis, architect.
One of these vases is represented in the cut on page 1041.

644 HOFREICHTER, CARL, *Reichenau, Bohemia*—Manufacturer.
Papier-maché tobacco-boxes; spice and sugar-boxes; pincushions, boxes, &c.

645 BEHR, CARL, *Prague, Bohemia*—Patentee and Manufacturer.
A column, a pedestal, and a box, as samples of artificial marble.
Samples of gilt wood, which will bear washing.
Liphothanic compositions.

645A KÖLBEI, B., *Vienna*—Carver and Gilder.
A gilt wooden frame for looking-glass or picture. Specimens of frame ornaments.

646 AEF, FRIEDRICH, *Vienna*—Manufacturer.
A flower-screen of bamboo and cane.
A stand for a figure and flowers, designed by M. de Bernardis. This stand is represented in the accompanying Plate 161.

647 FRANZONY, A., *St. Wolfgang, Ischl, Upper Austria*.
Flower-table.

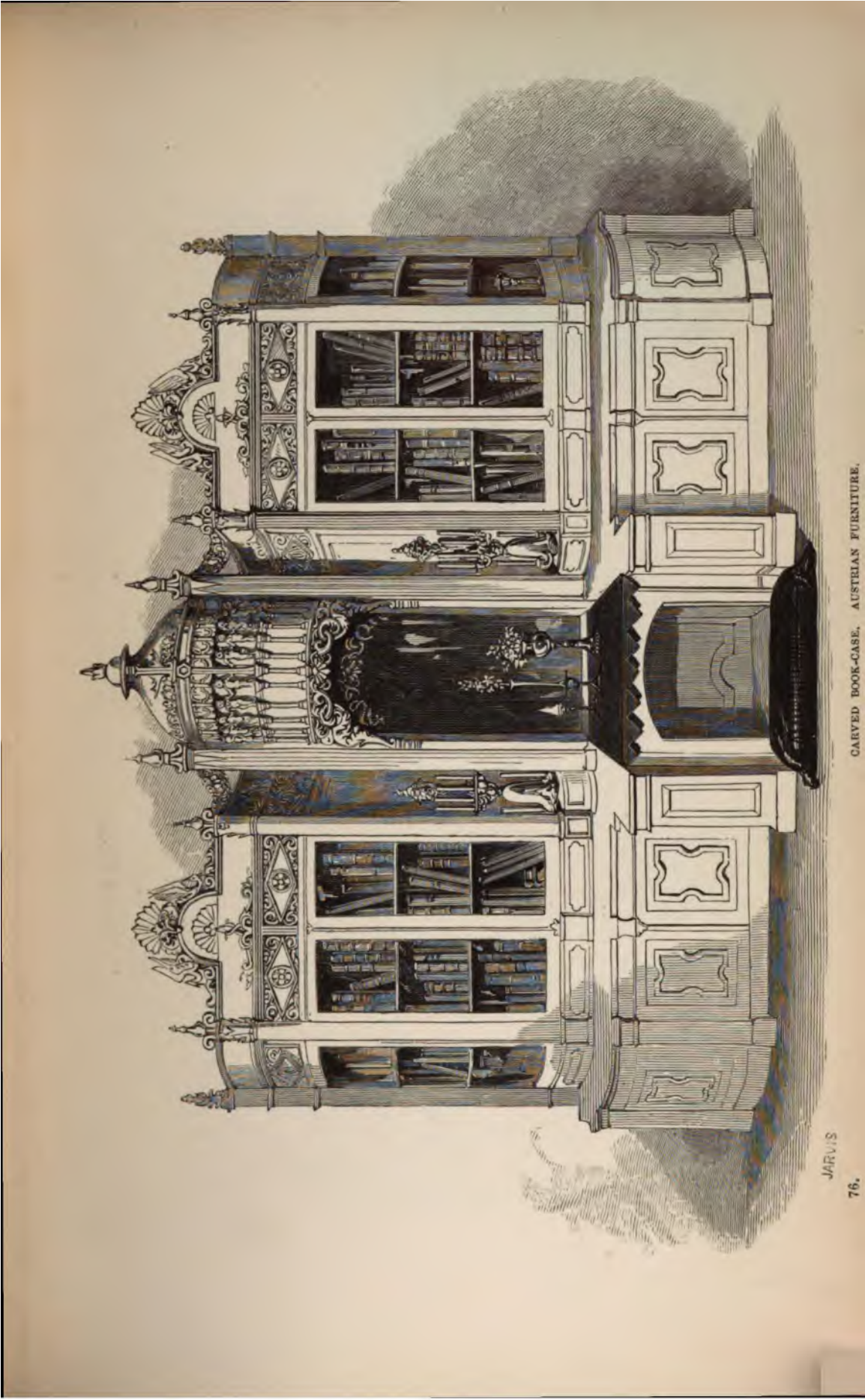


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76.

CARVED BOOK-CASE, AUSTRIAN FURNITURE.



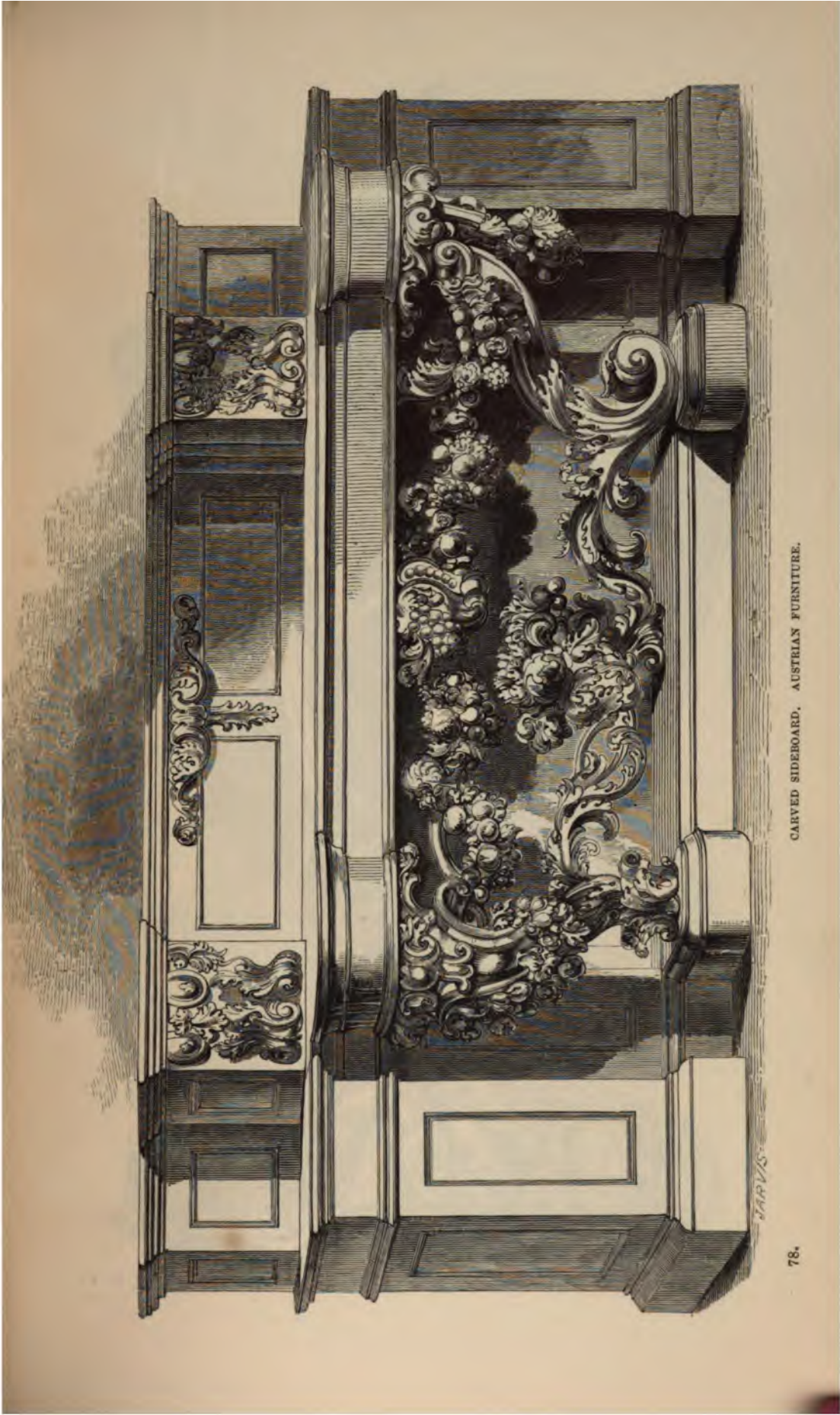


JARVIS
76.

CARVED BOOK-CASE. AUSTRIAN FURNITURE.

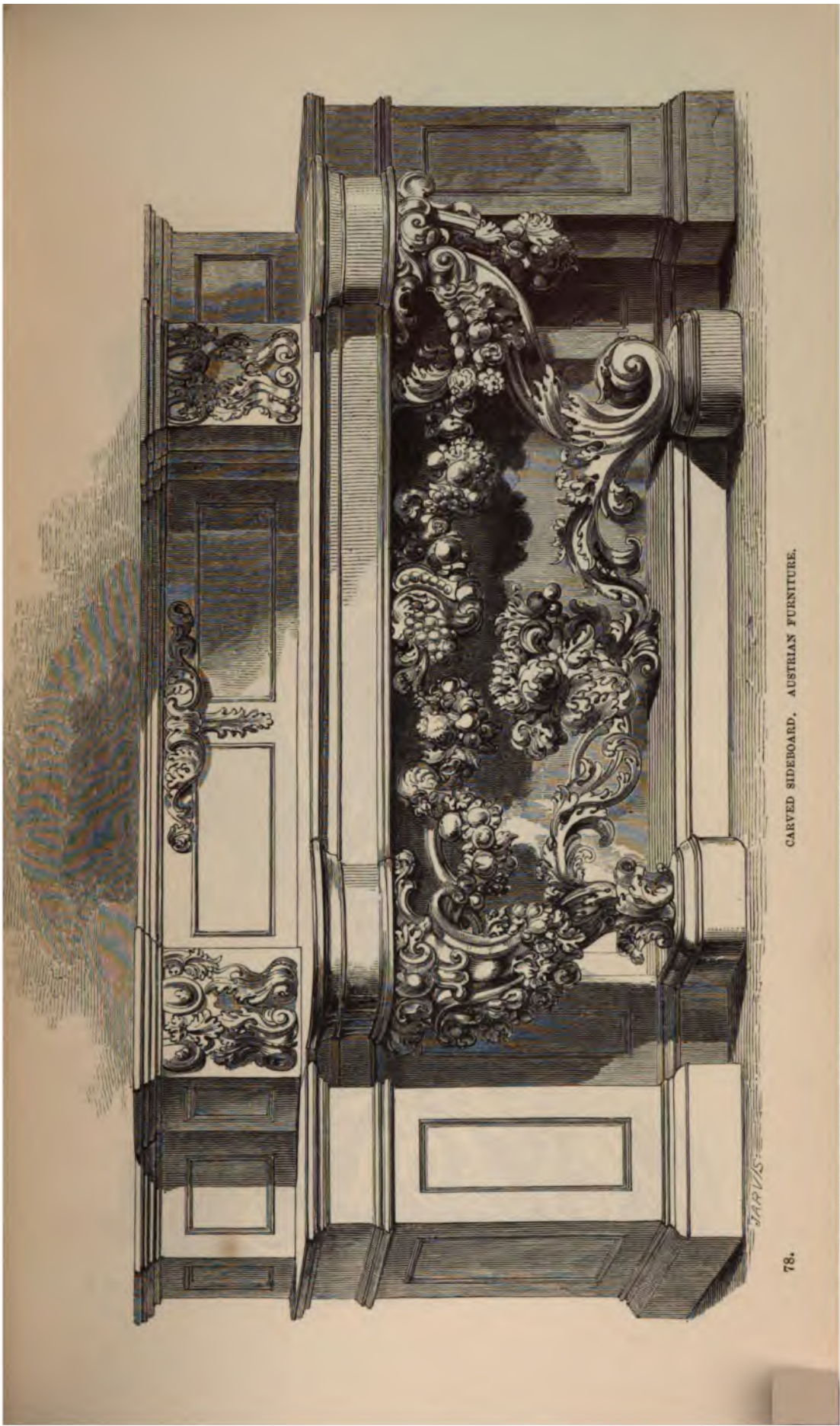






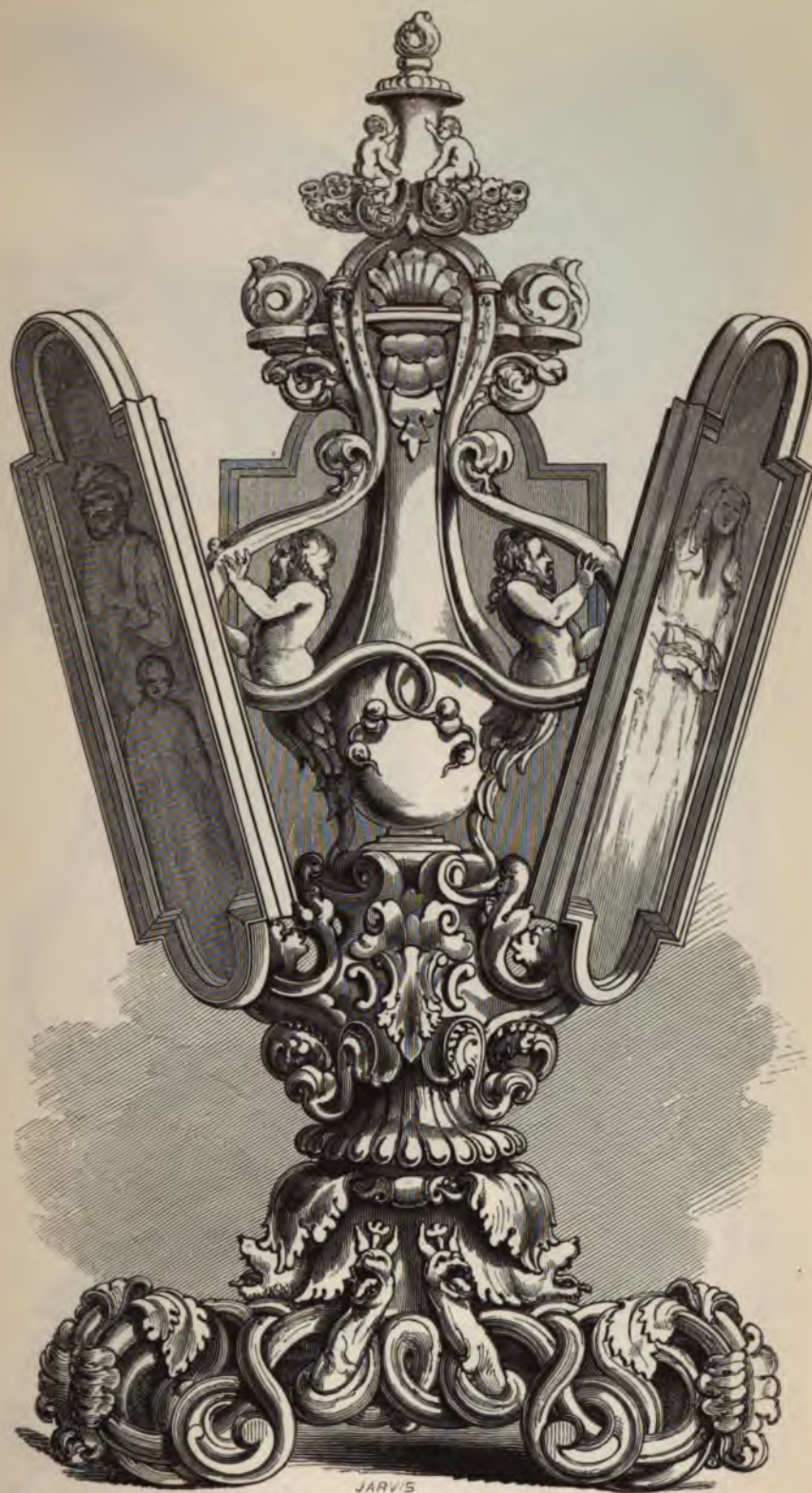
CARVED SIDEBOARD. AUSTRIAN FURNITURE.





CARVED SIDEBOARD. AUSTRIAN FURNITURE.





JARVIS

PICTURE STAND. AUSTRIA.





AUSTRIAN FURNITURE.



AUSTRIAN FURNITURE.



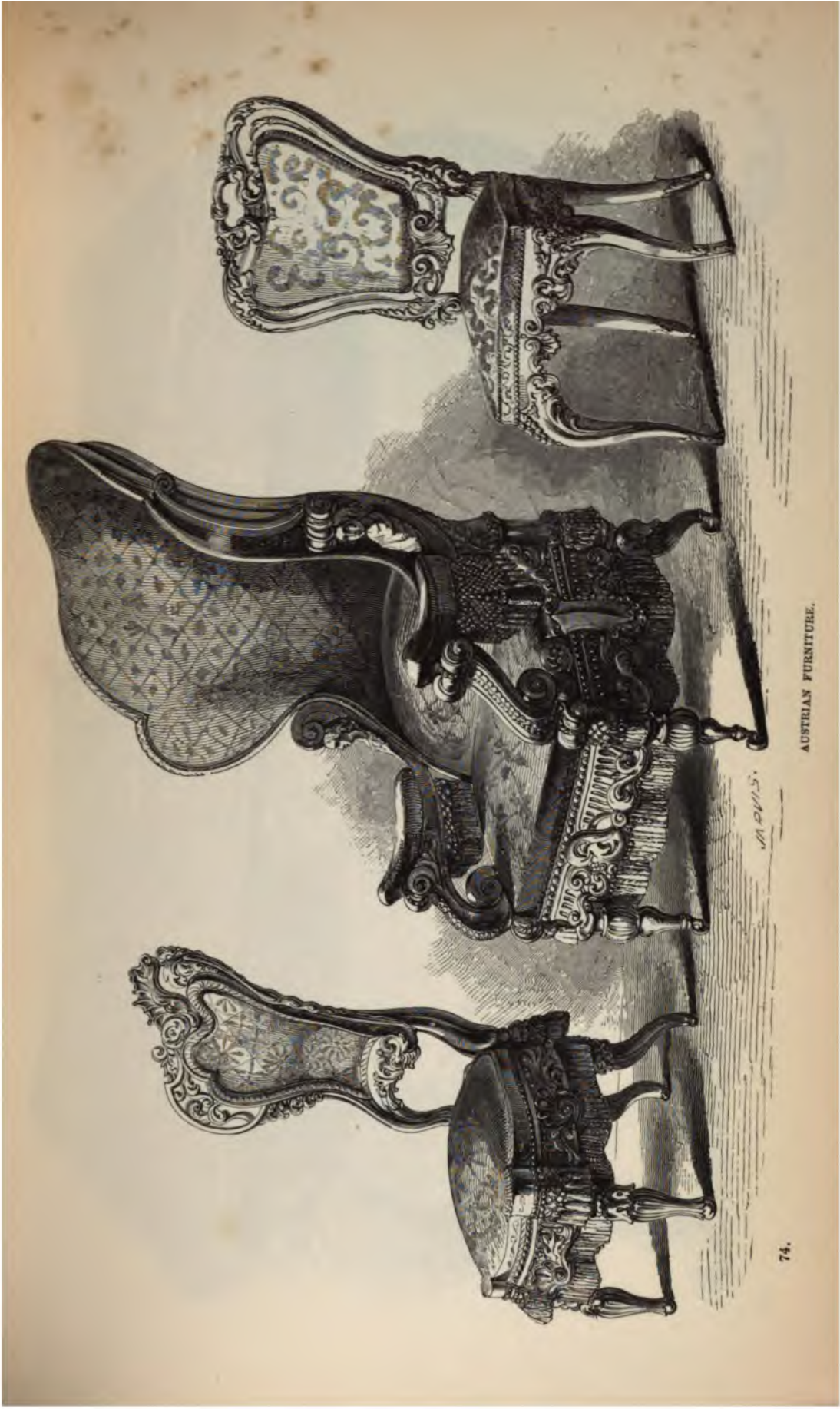


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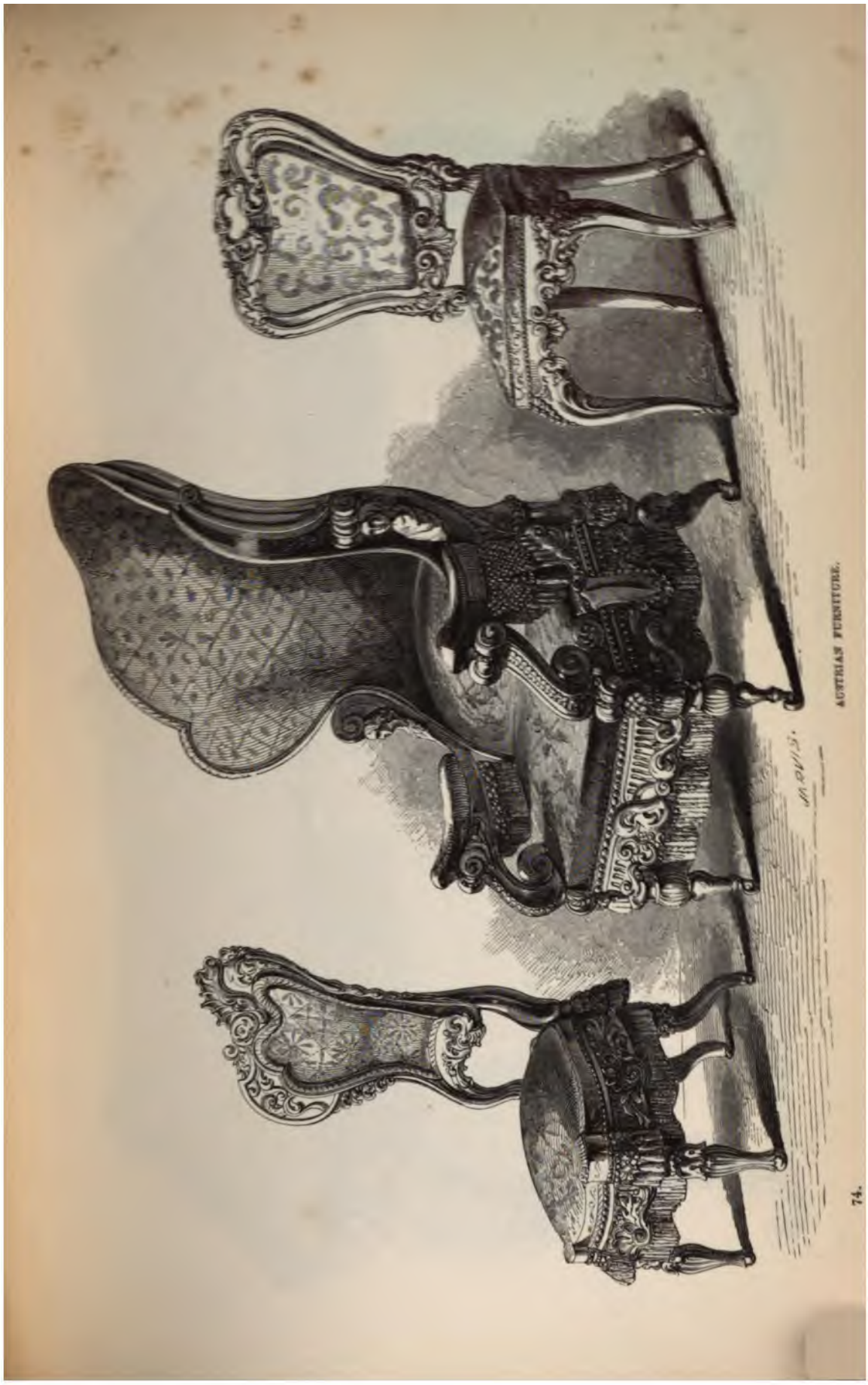
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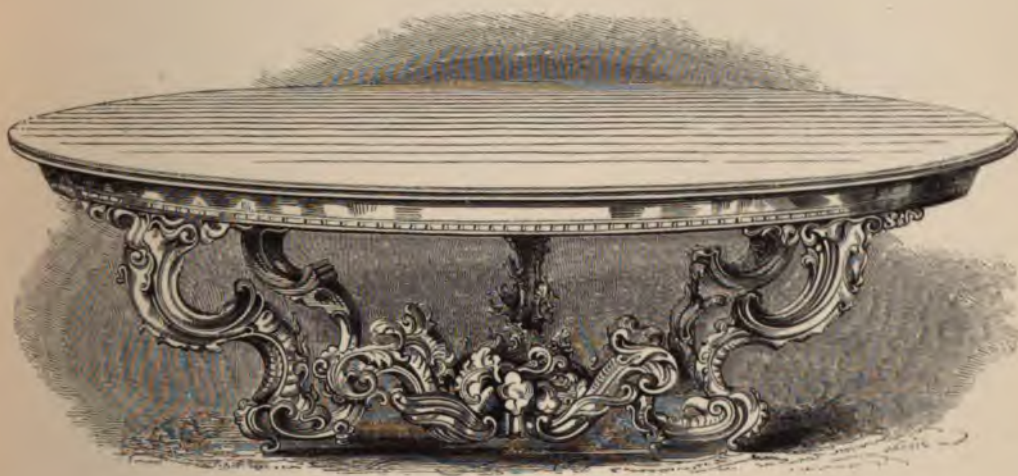




161. SCULPTURED FLOWER STAND, EXECUTED BY M. APH. DESIGNED BY M. R. BERNARDIS. VIENNA.



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12





Vase designed by B. de Bernardis.

8 MELZER, GEORG, *Krems-on-the-Danube, Lower Austria*—Artist.

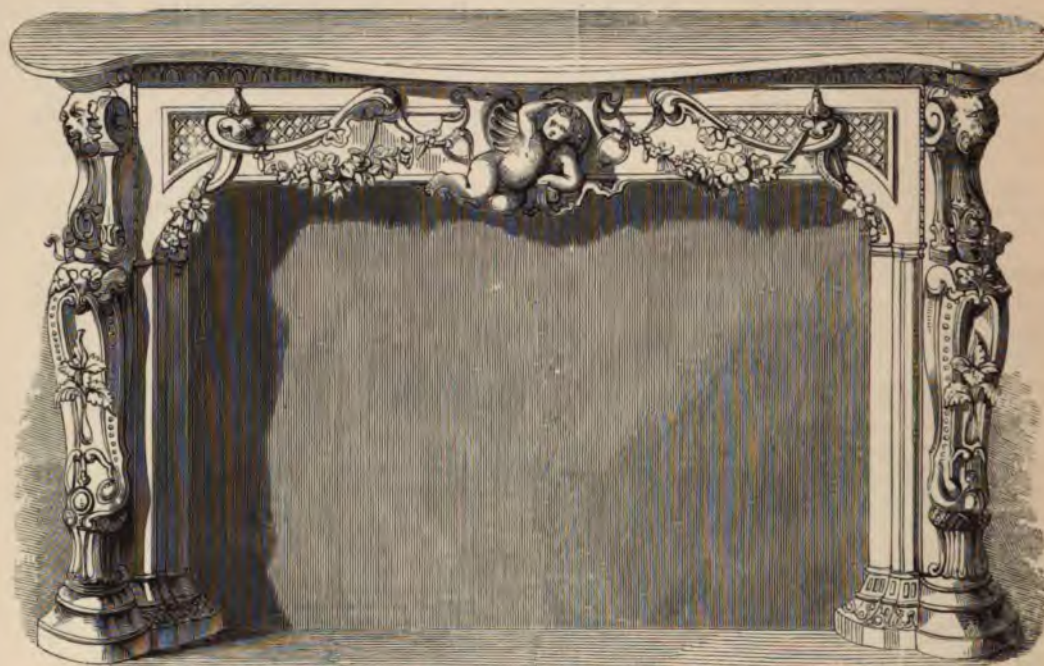
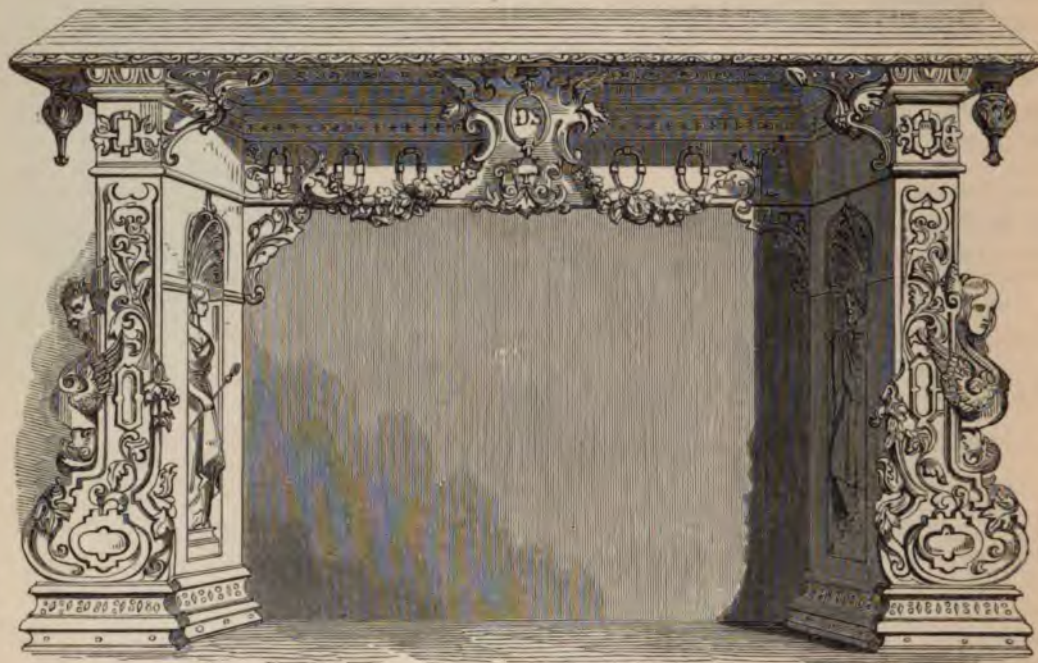
A wall-basket of various kinds of bark.

9 PAULLER, JOH. & SOH, *Vienna*—Gilders.
Picture-frames; sconces, gilt wood.

10 POLT, ANTON, *Vienna*—Gilder.
Prie-Dieu altar in old Gothic style. The accompanying plate 70 represents this object.

- 651 SPOERLIN & ZIMMERMANN, *Vienna*—Manufacturers.
Paper-hangings and borders. Models of friezes and cornices.
Illustrations of machinery and parts of machinery, for the use of schools.
- 652 HALLER'S (JOH.), WIDOW AND SON-IN-LAW, *Vienna*—Manufacturers.
Toys of paper, wood, metal, &c.
- 653 KIETAIBL, FRANZ, *Vienna*.
Mechanical and musical toys of wood, metal, paper, &c.
- 654 MÜLLER, C. A. *Oberleutensdorf, Bohemia*—Manufacturer.
Toys of paper, wood, metal, &c.
- 655 PURGER, J. B., *Gröden, Tyrol*—Manufacturer.
Carvings in pine, lime, maple, &c., such as lay figures, from the smallest to the largest size. Figures and toys.
- 656 FALLER, FRITSCHER, & CO., *Vallonara, near Bassano*—Manufacturer.
Straw hats and bonnets.
- 657 TANDLER, STEFAN, *Zinnwald, Töplitz, Bohemia*.
Specimens of straw plaiting and straw flowers.
- 658 KUMPF, IGNAZ, *Schluckenau, Bohemia*—Manufacturer.
Wicker table-mats (spadrilles), hats, &c.
- 659 WUNSCH, ANTON, *Altehrenberg, near Rumburg, Bohemia*—Manufacturer.
Chip caps, table-mats (spadrilles), &c.
- 660 BIONDEK, MICHAEL, *Baden, Vienna*—Producer.
Scented agriot cherry-tubes for tobacco-pipes, sticks, &c.
- 661 LANG, FRANZ, *Vienna*—Producer.
Odoriferous cherry-tubes for tobacco-pipes, sticks, &c.
- 662 PARTSCH, A., jun, *Theresienfeld, Lower Austria*—Manufacturer.
Odoriferous cherry-sticks for tobacco-pipe tubes.
- 663 TRENNER, JOSEF, *Baden, Vienna*—Producer.
Agriot cherry-sticks.
Odoriferous cherry-sticks for pipe-tubes, sticks, &c.
- 664 ALBA, SAMUEL, *Vienna*—Manufacturer.
Cigar mouth-pieces of wood, bone, meerschaum, and amber.
Meerschaum tobacco-pipe bowls.
Tobacco-pipe tubes and mouth-pieces.
Amber mouth-pieces.
- 665 ARBER, JOHANN, *Vienna*—Manufacturer.
Mother-of-pearl buttons.
- 666 ASTRATH, CARL, *Vienna*—Manufacturer.
Agriot cherry tubes and cigar mouth-pieces of meerschaum and amber, carved and mounted with gold and jewels.

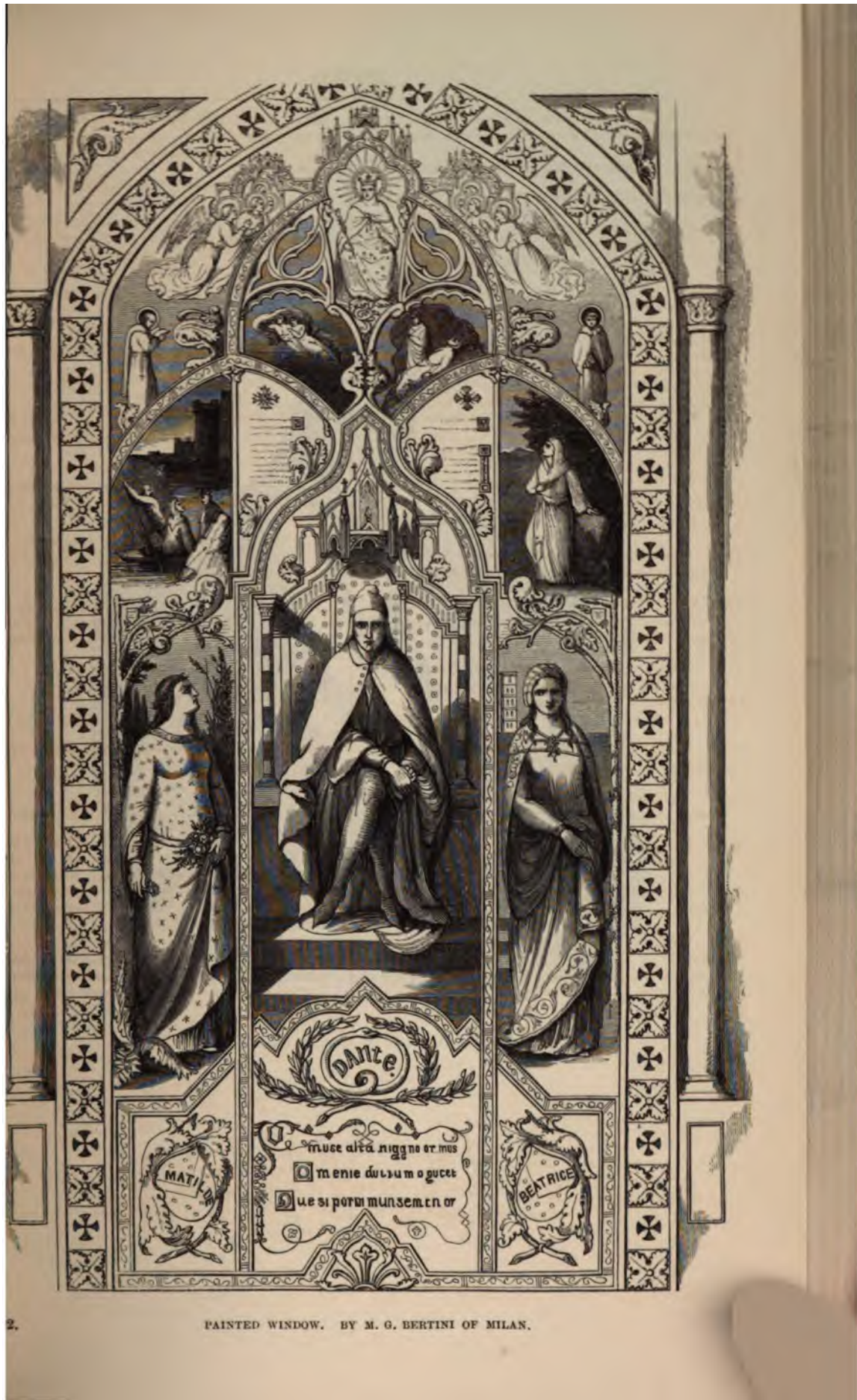
- 667 BEISEGEL, PHILLIP, *Vienna*—Manufacturer.
Fancy turnery: Agriot cherry tubes and sticks.
Tobacco-pipes and cigar-holders of meerschaum, amber, mother-of-pearl, and horn.
Tobacco-pipe bowls of meerschaum, silver mounted and carved.
[In the department of turnery and carving in wood, bone, pearl, meerschaum, amber, ivory, and tortoise-shell, Vienna occupies an eminent position. The carved tobacco-pipes, cigar mouth pieces, and similar articles for the use of smokers, may be said to be almost unrivalled for design, tastefulness, and cheapness. They are fully represented in the Exhibition, as likewise carved sticks, umbrellas, and parasols, which also form an extensive trade in Vienna.]
- 668 DREHER, ADOLF, *Vienna*—Manufacturer.
Ivory figures and chess-men.
Tortoise-shell and horn snuff-boxes.
Rosewood and horn ink-stands.
Billiard balls.
Sets of salad-knives and forks of ivory, and turnery of mother-of-pearl, horn, ivory, tortoise-shell, and wood.
A crucifix, and various figures.
- 668A KETTERL, E., *Vienna*—Turner.
Fancy articles in bone and ivory.
- 669 ENSTOLLER, GEORG, *Stadt Steyr*—Manufacturer.
Styrian tobacco-pipe bowls of wood.
- 670 FLÖGE, GERHARD, *Vienna*—Manufacturer.
Wood, amber, and meerschaum cigar mouth-pieces, and tobacco-pipe tubes.
Assortment of meerschaum tobacco-pipe bowls.
Chess-board of ivory, with figures.
- 671 FRIEDRICH, JOH., *Vienna*—Manufacturer.
Cigar mouth-pieces of meerschaum and amber, carved with letters, figures, &c.
- 672 GRÜNHUT, W. & Co., *Prague*—Manufacturer.
Meerschaum pipe; cigar mouth-pieces; cigar-pipes.
- 673 GRÜNHUT, J., jun., *Prague*—Manufacturer.
A meerschaum tobacco-pipe.
A cigar mouth-piece and a cigar-pipe.
- 674 GRÜNHUT, ANTON, sen., *Prague, Bohemia*—Manufacturer.
Meerschaum pipes, and cigar mouth-pieces.
- 675 HARTMANN, LUDWIG, *Vienna*—Manufacturer.
Various kinds of walking-sticks, of wood, cane, &c. Stick-mountings.
Tobacco-pipe tubes. Cigar mouth-pieces of wood, amber, meerschaum, and horn. Pipe mouth-pieces. Tobacco-pipe bowls of meerschaum, Turkish clay pipes.
Assortment of cut cameos. Work-box of bone.
A tobacco-pipe of ivory. A cup of stag-horn.
A large piece of amber. Amber necklaces. Ivory buttons, &c.
- 676 INFANGER, MICHAEL, *Stadt Steyr, Upper Austria*—Manufacturer.
Styrian hunting tobacco-pipes, bowls of wood.
- 677 KRAFTL, JOSEF, *Vienna*—Manufacturer.
Pocket ink-stands, of various kinds of wood. Pen-holders of bone and wood; umbrella handles and rings, and similar turnery.
- 678 LITSCHKE, CARL, *Vienna*—Manufacturer.
Cigar mouth-pieces and pipes of meerschaum, amber, wood, horn, &c.
Tobacco-pipe tubes and mouth-pieces.
- 679 LUDWIG, FRANZ, *Vienna*—Manufacturer.
Various kinds of walking-sticks, of wood and cane. Walking-stick pipes.
- 680 NAGL, LEOPOLD, *Vienna*—Manufacturer.
Cigar mouth-pieces and pipes of meerschaum and amber.
Tobacco-pipe tubes and mouth-pieces.
- 681 PFEIFFER, LEOPOLD, *Vienna*—Manufacturer.
Different kinds of pipe-tubes.
- 682 PFREGNER, FRANZ ANTON, *Vienna*—Manufacturer.
Cigar-holders of various kinds of wood, horn, bone, and cocoa-nut.
- 683 SIEVERT, EDUARD, *Vienna*—Manufacturer.
Meerschaum and amber cigar mouth-pieces.
- 684 SCHWARZ, JACOB, *Vienna*—Manufacturer.
Medallions, penholders, needle-cases, thimbles, paper-knives, ink-stands, screens, watch-stands, and similar articles of mother-of-pearl.
- 685 TAUTZ, ADALBERT, *Vienna*—Manufacturer.
An assortment of walking-sticks, of whalebone, cane, snake-wood, with carved and engraved handles of stag-horn, ivory, silver, &c.
- 686 WOJTECH, JOSEPH, *Vienna*—Manufacturer.
Pipe-tubes of wood, of various kinds.
- 687 ZETTLER, JOSEPH, *Vienna*—Manufacturer.
Tobacco-pipe and cigar-holders.
Bowls of meerschaum.
Cigar mouth-pieces of amber, cocoa-nut, &c.
- 688 PETSCHACHER, ALEXANDER, *Vienna*—Patentee and Manufacturer.
Hookahs and elastic tobacco-pipe tubes of various kinds, made by machinery.
- 689 BEGSTEIGER, MICHAEL, *Sierning, Stadt Steyr*—Manufacturer.
Rules, of various kinds.
- 690 BUCHBERGER, FRANZ, *Stadt Steyr*—Manufacturer.
Rules, of various kinds.
- 691 TOBER, JOH., *Prague, Bohemia*—Manufacturer.
Rules, of various kinds.
- 692 TITTE, ADOLF, *Vienna*—Manufacturer.
Sticks for umbrellas and parasols, and mountings for the same.
- 692A WEISS, JOSEPH, *Vienna*—Manufacturer.
Umbrella and parasol sticks and handles.
- 693 ZANDRA, JOSEPH, *Vienna*—Turner.
Sticks for umbrellas and parasols, and mountings for the same.
- 694 HERDT, J. B., *Vienna*—Manufacturer.
Silk parasols.
- 695 RADEMACHER, CHRISTIAN, *Vienna*—Manufacturer.
Silk parasols.
- 696 RITTER, NORBERT, *Vienna*—Manufacturer.
Hair-powder, chignon combs and brushes of horn, tortoise-shell, and ivory; walking-sticks; ivory cases, &c.



- 696A HERMANNSTADT TRADE UNION, *Transylvania*.
A variety of combs.
- 697 KRATSCHEMANN, M., *Vienna*—Patentee and Manufacturer. (Agent, M. L. Kanitz & Sons, Vienna.)
Horn buttons for coats, waistcoats, trousers, &c.
- 698 METZNER, WILHELM, *Vienna*—Manufacturer.
Coat, waistcoat, and shirt buttons, of mother-of-pearl and hoof-horn, in various forms and colours.
- 699 BITTKER, F., *Neudorf, Bohemia*—Manufacturer.
Planes for joiners.
Wooden rods for making lucifer-matches.
- 700 BÜRGER, JOSEFA, *Vienna*—Manufacturer.
Artificial flowers, of various kinds.
- 701 SCHLATER, H., *Vienna*—Modeller.
Various kinds of wax figures and artificial flowers.
- 701A OPPENHEIMER, CAROLINE, *Vienna*—Manufacturer.
A lamp screen, cut by hand.
- 702 SERAFINO, PALATINI & Co., *Venice*—Manufacturers.
Twenty-five specimens of assorted masks.
- 703 GASSER, JOHANN, *Vienna*—Sculptor.
"Venus bathing," in bronze. Four small figures, in bronze. Plaster statuette of a lady.
Model in bronze and zinc for a fountain.
Flower vase, cast in bronze and zinc.
- 704 KÄHSZMANN, JOSEPH, *Vienna*—Sculptor.
Three statues, of Carrara marble, representing "A shepherd," "A flower-girl," and "Hebe with the eagle."
- 705 MAX, EMANUEL, *Prague*—Sculptor.
A group, in white Carrara marble, representing "Hagar and Ishmael."
A bas-relief, in Carrara marble—"An Amazon on horseback."
- 706 CACCIATORE, BENEDETTO, *Milan*—Sculptor.
Bambino in a flower-basket, executed in Carrara marble.
- 707 COCCHI, LUIGI, *Milan*—Sculptor.
Statue in marble—"The Virgin."
- 708 CROFF, GIUSEPPE, *Milan*—Sculptor.
Statues in Carrara marble:—"Leda and the Swan."
"Danæe awaiting the golden shower." A group, representing "Hermes and Salmace."
- 709 EMANUELI, GIOVANNI, *Milan*—Sculptor.
Statue in Carrara marble—"A boy with a bird's nest."
- 710 FRACCAROLI, INNOCENZO, *Milan*—Sculptor.
Two statues in Carrara marble:—"The wounded Achilles," and "David slinging the stone."
A group in marble—"Atala and Chactas."
- 711 GALLI, ANTONIO, *Milan*—Sculptor.
Three statues in Carrara marble:—"Susanna at the bath;" "Jephtha's daughter;" and "A youth on the sea-shore."
- 712 GANDOLFI, DEMOCRITO, *Milan*—Sculptor.
Group in Carrara marble, "The Emigrant" (a veiled widow begging for her children), an episode from the history of France in 1793.
Statuette in Carrara marble, "Trust in God."
Statue in marble, for a tomb, "Grief."
Statue in plaster, "Italy."
- "Dancing girl," in marble, copy of Canova.
Mantelpiece, with mirror frame, in Carrara marble, in the style of the 17th century, with figures of Cupid and Psyche, &c.
Model of a fountain, in the Asiatic style, to be placed in a room, with a group of three statues. This can be converted in winter into a fire-place.
A triptich, modelled in ivory paste.
Eight medallions, in ivory paste, representing ideal heads, and august and illustrious historical personages.
Thirteen models in wax, plaster, and terra cotta, representing—the Evangelists; the Bride of Solomon's Song; St. Cecilia; Rebecca at the Fountain; Rachel at the Well; Hero awaiting Leander (this would serve to light the room in which it is placed, by introducing a jet of gas into the torch held in the hand); Esmeralda; Modesty; Helen urging Paris to attack the enemies of Troy.
- 713 STRAZZA, GIOVANNI, *Milan*—Sculptor.
Statue in marble, "Ishmael in the desert." (Property of P. Gonzales, Milan.)
- 714 MAGNI, PIETRO, *Milan*—Sculptor.
Group in Carrara marble, "Learning to walk: the first step."
- 715 MANFREDINI, GAETANO, *Milan*—Sculptor.
Statue in Carrara marble, "Narcissus at the fountain."
- 716 MARCHESI, LUIGI, *Milan*—Sculptor.
Statue in Carrara marble, "Eurydice bitten by the snake."
- 717 MICOTTI, IGNAZIO, *Milan*—Sculptor.
A statue in Carrara marble, child with dog, "Candour."
- 718 MOTELLI, METELLO, *Milan*—Sculptor.
Group in Carrara marble, "Cupid's vintage."
- 719 DAL NEGRO, PIETRO, *Milan*—Sculptor.
Statue in marble, "Innocence," represented by a boy bitten by a viper.
- 720 PIEROTTI, GIUSEPPE, *Milan*—Sculptor.
Group in plaster, "Mazeppa being bound to the wild horse."
"An Arabian horse attacked by a serpent," in Carrara marble.
- 721 PUTTINATI, ALESSANDRO, *Milan*—Sculptor.
Statue in Carrara marble, "Prayer."
- 722 SANGIORGIO, ABBONDIO, *Milan*—Sculptor.
Statues in Carrara marble, 1. "A soul ascending to Heaven." (Property of J. R. Jaffray, Esq.)
Two heads in Carrara marble:—
2. "Head of the Redeemer."
3. "The poet Monti."
- 723 SOMAJNI, FRANCESCO, *Milan*—Sculptor.
Group in Carrara marble representing "Pan and Syrinx."
- 724 GOTTL, BERNARD, *Carlsbad, Bohemia*.
Two colossal vases of Carlsbad thermal tufa, executed by Knoll Brothers, of Carlsbad, each 2 ft. 9 in. high, and 1 ft. 7 in. diameter.
- 725 BENZONI, GAETANO, *Milan*—Sculptor.
A mantelpiece in marble with eight figures of boys.
- 726 BOTTINELLI, GIUSEPPE (late), *Milan*—Sculptor.
Three marble mantelpieces, ornamented (one the property of D. Sopransi, of Milan). Mirror frame.
Model in plaster of a mantelpiece.
These mantelpieces are represented in the accompanying Plate.

- 728 **MOTELLI, GAETANO, Milan—Sculptor.**
A mantelpiece in Carrara marble in the Anacreontic style.
A group in Carrara marble, "Paolo and Francesca di Rimini."
Nest of Cupids. (Property of Joseph Paxton, Esq.)
- 729 **SZENTPETERY, JOSEPH, Pesth, Hungary.** (Agents, R. & J. Garrard & Co., Gold and Silversmiths and Jewellers, 31 Panton Street, and 25 Haymarket.)
A copper-embossed tableau (in the possession of Henry Kirk, Esq., 15 St. James's Square). This unique work of art represents the battle of Arbela (about 330 years before Christ), in which Darius, King of Persia, is defeated by Alexander. It contains hundreds of figures in a relief of 3 inches, produced from a single sheet of copper, about an eighth of an inch thick, hammered and punched up with punches of various forms and sizes; the sheet of copper being passed through the fire hundreds of times to soften it and make it malleable.
The artist is self-taught, was occupied on this work for five years, and is now 70 years of age.
Tableau representing the Indian King Darius as a prisoner by Alexander the Great; with the figures embossed by hand on a plate of silver weighing 8 ounces.
- 729A **FRIEDRICH, J., Prague, Bohemia—Artist.**
Statuette of fine silver: Rudolph of Hapsburg.
- 730 **PETROVITS, D., Vienna—Inventor and Sculptor.**
Thirty-three medallions cast in a metallic composition by a newly-discovered method.
- 731 **CESARI, DESIDERIO, Milan—Sculptor.**
Three portraits of G. D. Romagnosi, A. Rolla, and Bertini, chiselled and embossed in sheet copper, in the style of Benvenuto Cellini.
- 732 **FRENER, GIOVANNI B., Milan—Engraver.**
Medal in bronze of Joseph Verdi.
- 733 **ZAPPARELLI, GAETANO, Brescia—Engraver.**
Medals, dies, and rings, with sample-book.
- 734 **BORRINI, LUIGI, Milan—Painter.**
A lay figure (artist's model).
- 735 **DINKLER, CARL, Vienna—Engraver.**
Metal stamps, to be used with any coloured ink.
- 736 **GEYLING, CARL, Vienna—Painter on Glass.**
Paintings on glass, representing a church; a winter landscape in Upper Austria; view of Johannisberg, on the Rhine; view of the town-gate of Kremnitz, in Hungary.
- 737 **BERTINI, GIUSEPPE, Milan—Painter.**
Great painted window, representing "Dante and some of his ideas." This window is represented in the accompanying Plate.
Oval painting on glass: the Holy Family.
- 738 **MONTANARI, ALESSANDRO, Milan—Decorator.**
Vaulted ceiling of a library, with portrait of Milton, and scene from Paradise Lost, as centre.
- 739 **VOGEL, CARL FRIEDRICH, Milan.**
Photographs.
- 740 **PUCHEE, JOHANN, Veldes, Upper Carniola—Inventor.**
Photographs on glass, by a new method.
- 741 **BONGIOVANNI, BARTHOLOMÆUS, Vienna—Sculptor.**
Design for a candelabrum, executed with crowquill, in gold frame.
- 742 **HARTMANN, LOUIS, Prague—Pattern Designer.**
Various designs for merino furniture, prints, &c.
- 743 **MONTI, RAFFAELLE, Milan, and 45 Great Marlborough Street, London—Designer and Sculptor.**
Statuette in Carrara marble—
The Fall.
A veiled Vestal. (Property of His Grace the Duke of Devonshire.) The annexed Plate represents this statuette.
Statuettes, Ancient and Modern Love. (Property of B. Cohen Esq.)
Group of children, representing Innocence.
Statue of a Circassian Slave in the market.
Group, Angelica and Medora.
Group of two Girls fishing. (Property of an English gentleman.)
Statuette of a Boy catching a Grasshopper. (Property of Thos. Baring, Esq., M.P.)
- 747 **THOMSON, Miss, 35 Euston Square, London—Proprietor.**
Carpet worked by the late Empress Marie Louise, assisted by the late Queen of Wurtemberg, and other distinguished ladies. It was commenced in 1811, and was intended as a present to the Emperor Napoleon. After his death it was in hand for eight years, having been finished by other noble ladies.
- 748 **FARINA, JOHN MARIA, Cologne, on the Rhine, opposite the New Market, and (London) 52 Mark Lane. (In the Furniture Room.)—Fountain which plays eau-de-Cologne.**





1911





247.

VEILED STATUE. M. R. MONTI, MILAN.





276.

GROUP IN MARBLE. M. R. MONTI. MILAN.



STATES OF THE GERMAN ZOLLVEREIN.

1. PRUSSIA, BADEN, and some other STATES of NORTHERN GERMANY.

a. PRUSSIA.

b. PRUSSIA—BADEN—ELECTORAL HESSE.

c. PRUSSIA.

d. PRUSSIA—ELECTORAL HESSE—LIPPE.

e. PRUSSIA—SAXON GRAND DUCHY and DUCHIES—BRUNSWICK—ANHALT
and THURINGIAN PRINCIPALITIES.

2. BAVARIA.

3. SAXONY.

4. WÜRTEMBERG.

5. FRANKFORT-ON-THE-MAINE.

6. GRAND DUCHY of HESSE.

7. LUXEMBOURG.

8. NASSAU.

Dr. VON VIEBAHN, Berlin, President.

Prof. Dr. SCHUBARTH, Berlin, Commissioner for *Prussia*.Prof. Dr. VON HERMANN, München, Commissioner for *Bavaria*.Prof. Dr. HÜLSSE, Dresden, Commissioner for the Kingdom of *Saxony*.Dr. STEINBEIS, Stuttgart, Commissioner for *Württemberg*.Prof. Dr. RAU, Heidelberg, Commissioner for *Baden*.Mr. SCHREIBER, Biebrich, Commissioner for *Electoral Hesse*.Mr. ROESSLER, Darmstadt, Commissioner for the *Grand Duchy of Hesse*.Prof. Dr. GUSTAV SCHUELER, Jena, Commissioner for the *Grand Duchy of Saxony* and
the other *Thuringian States*.Prof. Dr. VARRENTREPP, Brunswick, Commissioner for the *Duchy of Brunswick*.Mr. ODERNHEIMER, Wiesbaden, Commissioner for the *Duchy of Nassau*.Mr. PHILIPP ELLISEN, Frankfort-on-the-Maine, Commissioner for *Frankfort*.NORTH AND SOUTH SIDE, C. D. E. 62, 23; F. 63 to 67; 75, 76; G. 62 to 64, and 67;
H. I. J. 62 to 64; K. 61 to 67; L. 63 to 66; M. 63 to 67; N. O. P. 63 to 69;
Q. R. S. 62 to 69.

NORTH EAST CENTRAL GALLERY, G. H. 67; I. 62 to 67; 74 to 76.

SOUTH EAST CENTRAL GALLERY, M. 62 to 67; N. O. 67.

STATES OF THE GERMAN ZOLLVEREIN.

INTRODUCTION.

GERMANY may be divided into three commercial groups, of which the most extensive, generally designated "The Zollverein," or "Great Custom Union," was constituted in the year 1828 on the invitation of Prussia. It consists of twenty-six Germanic States, which form the centre of the vast Germanic region. The Zollverein embraces two-thirds of the entire Germanic territory, occupied by twenty-nine millions of inhabitants.

The limits of the Zollverein are—on the south, the Germanic provinces of Austria and Switzerland; on the north, the kingdom of Hanover, the two Grand Duchies of Mecklenburg, the Duchy of Limburg, and the Netherlands. To arrive at an adequate notion of the extent and value of the general industry of Germany, it is necessary not to omit out of our consideration the Northern Powers which hitherto have taken no part in the Custom Union.

In the Official Catalogue of the Great Exhibition we find that the number of exhibitors from these States, including Hamburg, Hanover, Lübeck, Mecklenburg, and Oldenburg, is not less than 1,520, however many more German contributions have been received. These data show that even after deducting from this aggregate the number of Austrian exhibitors, Germany will remain nearly equal to France as to the numerical strength of her list of exhibitors.

The industry of Germany is, generally, in a satisfactory state of progress; and if the conditions and the difficulties under which that great country has laboured during the last historic period referred to be duly considered, the inquirer must be at once astonished and profoundly impressed by the consideration that even under those manifold impediments to trade which within that interval have prevailed in some provinces of the Germanic territory, the genius of art and industry has shed its fertilizing and creative influences over the entire land, enabling the German nation at large to enter the field of honourable competition opened in London to the industry of all nations, with other states which have for centuries past enjoyed the blessings of civil freedom and domestic unity.

In Germany the differences of laws, of coins, of weights and measures, subsisting between her territorial divisions, have always proved a material hindrance to the advancement of industry and commerce. The Zollverein (embracing, as has been already stated, two-thirds of the most industrious provinces of Germany) has already done much towards securing a fair development to that commerce and industry, and giving to both of them that sort of liberty and support which they enjoy in England and in France.

If we consider the statistics of the productions of agriculture, both in respect of those raised from the soil and those procured from the forest, of the results of industry and of those of art, we shall find that the value of these exports from the states forming the Zollverein, exceeds that of the imports into the same States from other countries by about 80,000,000 of thalers, or about 12,000,000*l.* sterling annually. The important share of the total yearly exports of Germany, which is contributed by the Zollverein, either goes definitively to Great Britain or to the Colonies and other possessions acknowledging the dominion of the British Crown, or is transported by the medium of British commerce and navigation to other foreign countries. The commercial reputation of such productions is already established by the increasing sales which they command.

The Zollverein commands neither the mechanical power nor the technical means that Great Britain possesses in so eminent a degree. But in all that regards the cultivation of talent and activity, taste, and that appreciation of the beautiful and the noble in every condition of society, which have always been a great natural endowment of German genius, the Zollverein may claim to rank with any other country of Europe, especially in those products which are of a class requiring the combination of utility, taste, and cheapness.

To a prosperous condition of industry one condition of mental character is essentially requisite, and this is possessed by the German in an eminent degree. It is the consciousness that never and in no effort of human art or science is the ultimate stage of perfection to be reached; and that it is only by an impartial appreciation of foreign productions, and adopting to a reasonable extent such improvements as we can borrow from them, that we can guard against an overweening opinion of ourselves operating to the ruin of our own industry.

If we look at the productions (Raw Materials) in Group A. of this collection, we shall find in the first Class products of those branches of the national industry which have always been followed in Germany with scientific ability, circumspection, and practical energy—namely, the arts of mining and metallurgy in general. In these arts, from a remote period, the Germans were the tutors to all other nations. The technology of these arts, still retained and used in all European languages at this day, is, in itself, evidence which confirms this assertion.

The mines of Prussia and Nassau have furnished such specimens as may suffice to convey some representation of the general condition of mining industry in those countries, and to secure to Germany an honourable rank in this department. A newly-discovered process for eliminating gold out of arseniated gravels (which latter, hitherto, considered as without any value) has been within a very recent period imitated even in Mexico. The productions of the Zollverein States in steel have not been surpassed by those of any other countries. Their yield of raw and their fabrication of forged iron, although not sufficiently extensive to vie with the monster iron works of England, are yet rapidly increasing. A beautiful collection of raw materials in these metals, deposited in this section of the Exhibition, especially merits the close attention of observant visitors.



An extensive and highly-important collection of objects is exhibited by Prussia and the conjoined States. They represent the various classes very fully, and give a forcible idea of the manufacturing resources of these States, and of the natural advantages derivable from the soil itself. The specimens of raw material and produce in particular are extremely interesting; and among them, the production of iron in a raw and preliminary stage of manufacture holds a prominent place. The production of zinc, also, forms an important feature in the metallurgical operations of these States, large quantities being annually exported to all parts of the world. Chemical preparations of interest are also exhibited. The specimens of wool represent the vast importance of the production of this raw material to the manufacturers of the Zollverein generally, and of Saxony in particular. Great interest also attaches to the beautiful specimens of amber in its natural and manufactured state. Some of these specimens are of a size rarely met with. The collection of this singular fossil resin forms an interesting feature in the local history of certain districts on the Samlandic coast. The amber-fishery was, at a former period, of no small importance to the King of Prussia. Among the machines exhibited are several of interest. In this number must be considered the large and costly apparatus for the evaporation of syrup, made of beaten copper. This apparatus is of the most recent construction, and exhibits features of skilful mechanical arrangement. A type-founding machine, agricultural implements, &c., are also shown. The philosophical instruments comprise several of a complicated character. An electro-magnetic self-registering anemometer, and the electro-telegraphic arrangements adopted on all the Prussian Government lines, are among these. The great celebrity, also, of the manufacturers of balances of Berlin and other places in this Union is maintained by the exhibition of several of these delicate and valuable instruments. The textile manufactures are illustrated by the specimens sent from a considerable number of manufacturers, both in cotton, wool, flax, and silk. The beautiful ornamental glass, and specimens of fine casting in iron, will also receive notice. From the porcelain works of Berlin have been forwarded some fine objects in illustration of the ceramic art. The objects included under the Fine Arts are such as will not be soon forgotten: among these is the statue of the Amazon, and several others in its immediate vicinity, of great beauty, and indicate elaborate care in the finish.—R. E.

1.—PRUSSIA, BADEN, AND OTHER STATES OF NORTHERN GERMANY.

Chief Commissioner in London, Dr. VON VIEBACH, 43 Albion Street, Hyde Park.

Agents in London, Messrs. STEIN and HALL, 70 Newgate Street, City.

1 THE ADMINISTRATION OF THE ROYAL PRUSSIAN SMELTING WORKS AND IRON FOUNDRY, Gleiwitz—Producer.

Samples of wrought-iron, as used for rollers, cast from iron which has been refined in a furnace by the use of gas; sheet-iron rollers; bar-iron rollers.

2 THE ROYAL PRUSSIAN IRON WORKS, Malapane, near Opeln.

Pair of hard cast-iron cylinders.

Several samples of materials and products prepared by a fire of wood-coal in the Royal Ironworks at Malapane.

Specimens of brown iron ore; clay-iron ore; limestone; sea-coal; coke; pig iron, foamy grey; ditto, grey metal; ditto from clay-iron ore not calcining; slags from melting of the clay-iron ore not calcining.

Several coloured slags from the regular working of the high furnace.

Fine iron of the finery by gas; mottled fine iron for the cast of rollers; light grey ditto, of the finery by gas (for such parts of machines as move at a high velocity).

Slags from refining the iron by gas.

Fragment of a rail.

Flat, square, and round irons, of different sizes.

[The process of refining iron by gas consists in driving carbonic oxide through the melted mass, by which the carbon is more effectually removed.—R. H.]

Red calamine from the mines at Scharley, near Beuthm, in High Silesia; white ditto ditto; red ditto from the Maria, Calamine Works, near Beuthm; white ditto ditto. Zinc in drops; white zinc (oxide of zinc); cadmium (metal).

[These calamine earths are carbonates of oxide of zinc combined with varying quantities of oxide of iron and aluminous earths. Some of these ores contain cerium. The territory of the Zollverein is the principal producer of zinc. Silesia possesses the most extensive zinc works in the world; and their production occupies a conspicuous place in the Great Exhibition,

the quality of the ore, as well as its rolling and its purification, differ from those of the zinc of any other region. It is also to be observed that the manufacturing of rolled, cast, and other descriptions and productions of zinc, are quite peculiar as practised in the Zollverein, and their export is of the highest importance to that Union. In illustration of this point, it may be stated that the East India market is supplied almost exclusively with zinc from Silesia, whereas, in former times, Chinese zinc was imported into the East Indies, and from thence into Europe.]

3 ROYAL WORKS AT KONIGHUTTE—Producers.

A collection of the most important materials used at the works in the manufacture of iron and zinc, as well as the products and half-products taken from the same, viz.: brown iron-ore, ochry-brown iron-stone, limestone, coal, coke, &c.; pig-iron, No 1, pig-iron, No. 2, grey, and pig-iron from red iron-stone; blast-furnace slags from the red iron-stone, various blast-furnace slags; white, mottled, and grey pig-iron.

4 ELSNER, VON GRONOW, & Co., *Tarnowitz, Silesia*,—Producers.

Specimen of Roman cement. The present sample was found at a depth of 160 feet in a lead mine (Frederik's mine) near Tarnowitz in Prussian Silesia. It consists of an argillaceous carbonate of lime and magnesia.

Floor-stone of Roman cement for paving.

[Roman cement, commonly so called, is obtained by the calcination of argillaceous carbonate of lime; but when, as in the present case, the cement stone contains magnesia, the result is a double silicate of lime and magnesia, which may probably be of very great solidity, and admirably adapted for pavement.—D. T. A.]

5 MANUFACTORY FOR PATENT WHITE LEAD, *Stettin*—Manufacturers. (Agent in London, Mr. Charles Kekulé, 60 Mark Lane.)
Samples of patent white lead.

6 GÜETTLER, WILHELM, *Reichenstein in Silesia*—Producer.

Specimens of arsenic, gold, washed and unwashed ore, ores, showing a process by which, out of the residue of the arsenic ores, the gold therein contained is chemically drawn out by moisture.

The process is grounded upon the trials of Mr. Plattner, Professor of Chemistry, at Freiburg, in Saxony.

Arsenic metal, glass, caput mortuum, &c. A piece of pure gold.

7 DU BOIS, C. A., *Hirschberg, Silesia*—Producer.

Samples of cinnabar, as prepared by the exhibitor for painting and the manufacture of sealing-wax; bisulphuret of mercury.

8 LUCAS, MORITZ, *Kunersdorf, near Hirschberg*—Producer.

Samples of cinnabar (Hg. S₂). Exhibited for purity and high quality of shades.

9 MILCH, A., *Warmbrunn and Cologne*—Producer. (Agent in London, Mr. Green, 17 Gough Square, Fleet Street.)

Samples of bricks, with drawing and description of a brick-press of a peculiar construction.

10 RIMANN, ERNST, *Hirschberg, Silesia*.

A small case of polished and unpolished precious stones found in the neighbourhood of Hirschberg.

11 RUFFER & Co., *Breslau*—Manufacturer.

An assortment of zinc-plates, of various thicknesses and sizes, including two as thin as a sheet of paper.

Ten zinc plates for tiles, fourteen by twenty-eight inches.

12 COCHLUS, E. E., *Oranienburg, near Berlin*—Manufacturer or Producer.

Large specimen of crystallization of prussiate of potash.

[This salt is remarkable for the beauty of its crystals, and not less for the brilliant colours of many of its compounds.—R. E.]

13 KUNHEIM, LOUIS ALBERT HUGO, *Berlin*—Producer.

A complication of crystals of sugar of lead.

Blue vitriol. Acetate of soda.

Sulphate of magnesia. Pink-salt.

Acetate of lime. Sulphate of alumina.

Oxide of tin. Nitrate of lead.

Tin-salt. Alum.

Carbonate of soda. Sulphate of soda. Phosphate of soda.

Tiniate of soda. Cyanate of potassium. Chloride and bichloride of tin.

Oxide of uranium. Tungstenic acid.

Vinegar. Potash.

14 SANDEN BERNHARD, VON, *Wiese and Marwitz, near Prussian Holland*—Producer.

Samples of raw and refined sugar from beet-root, the growth of the estate of Marwitz, belonging to the exhibitor, and produced at his sugar-refinery, being the first erected in the province of Königsberg, in the year 1850.

15 CHRISTIANI, C. H., *Kerstenbruch, near Wrietzen-on-the-Oder*—Producer.

Bottles of beer and extract of beer for ships' use, brewed without malt.

[Germany, generally, like all the northern regions of Europe, is less favoured by nature than the countries of the South, with their various gums and their oils; but she has abundance of other materials used as food.

Agriculture is by no means advanced in Germany to that degree of perfection which it has attained in England and in Belgium. But the manufactures of spirit and of sugar are carried on on almost every large estate included in the Zollverein to a degree of great perfection. In the manufacture of beer, especially, the Bavarian kind is universally celebrated.]

16 FARTHMAN, Captain, *Klein-Schwein*—Manufacturer.

Dried "potato-cuts" (sliced potatoes), prepared in a peculiar manner, so as to keep for years. Fine potato flour; middling flour of the same; black flour; and bran.

Out of 100 lbs. of cut potatoes, prepared and dried by the exhibitor, were produced:—50 lbs. of fine flour; 14 lbs. of middling flour; 24 lbs. of black flour; and 6 lbs. of bran.

[It may be necessary to state that there exists a most important distinction between the flour obtained from potatoes and wheat flour. The latter is rich in nitrogenous principles, the former consists chiefly of starch, and its nutritive properties are proportionally low. The potash present in the potato is considered to form an important element in its adaptation to nutrition, as a source of supply of that substance to the animal economy.—R. E.]

17 GROSS, J. D., *Berlin*—Manufacturer.

Vanille chocolates; Santé chocolates, without spice; spiced chocolates.

18 PAETSCH, GEORGE THEODORE, *Wrietzen-on-the-Oder*—Manufacturer.

Potato-starch syrup. This syrup, prepared from potato-starch and carefully purified, is clear and sweet, and is much used by the German brewers.

19 KRUSE, A. T., *Stralsund*—Producer. (London Agent, Mr. Charles Jones, 17 Mark Lane.)

Starch, prepared from the wheat of the country round Stralsund.

20 WEILL, C., *Berlin*—Manufacturer.

Various descriptions of fruits, preserved in sugar. Vegetables, preserved partly in butter, partly in their natural state. Potted larks.

21 UECHTRITZ, LANDESEDELSTER VON, *Mühlradtlitz, Silesia*—Producer.

Specimen of potato-starch.

22 THE ROYAL REMOUNTING DÉPÔT, *Treptow, Pomerania*—Producers.

Carded wool, the fleece of a ewe four years old, and of the Electoral breed; the weight of this fleece was after the shearing 4½ lb., including the fleece-wool. When younger the staple was larger, the weight of the fleece was somewhat higher, and the wool also plainer and less curled.

Carded wool, the fleece of a ram three years old; the weight of this fleece was after the shearing 5½ lb., including the fleece-wool.

Carded wool, the fleece of a ram four years old; the weight of the fleece was after the shearing 5½ lb., including the fleece-wool.

23 THAER, A. P., Councillor, *Möeglin, near Wrietzen-on-the-Oder*—Producer.

Washed and raw wool-fleeces, from the staple flock at Möeglin, intended to illustrate the richness of wool with fineness of hair in the merino breed.

24 LÖBBERT, EDUARD, *Zweibrodt, near Breslau*—Producer.

Specimens of wool.

25 VON LIPSKI, IGNATIUS, *Ludomy, near Obernick, Posen*—Producer.

Specimens of wool, in glasses, &c.

26 HEY, High Administrator of the Royal Domain —*Hainsburg, Sachsen*—Producer.

Wool-fleeces from the flock of the exhibitor at Hainsburg.

27 ROYAL ADMINISTRATION OF FRANKENFELDE, near *Wrietzen-on-the-Oder*, OCKEL—Exhibitor.

Fleece of a ram and of ewes, sheared in the spring of 1850.

Samples of wool, in show glasses.

28 ROTHSCHILD, BARON S., VON, *Oderberg, Silesia Superior*—Producer.

Fleece of merino ram, two years old; fleece of merino ram, three years old; fleeces of merino ewe and of its lamb; fleece of merino lamb three years old.

The flock from which these fleeces have been selected is said to be one of the most celebrated in Silesia; and out of it, sheep for breeding are sold to Silesia, Hungary, Galicia, and Pomerania.

29 KUEPFER, Councillor of Legation, *Bromberg*—Producer.

Merino fleeces of two-year-old ewes.

Exhibited on account of the fineness and regularity of the wool-staple, and as an illustration of the advance of the production of wool in the Prussian countries of the Middle Vistula.

30 NORDMANN, G. L., *Liszkow, near Inowraclaw*—Producer.

Fleeces of wool, exhibiting great regularity in the staple.

31 WINKLER, F., *Berlin*—Manufacturer.

An assortment of prepared, bleached, and dyed mushrooms and Venetian sponges. The finer raw sponges are

imported from Italy, the Greek isles, and the Levant by way of Venice, Trieste, or Hamburg. In the preparation the raw sponges lose from 50 to 75 per cent. in weight. The sponges purified by chemical process, as well as those dyed fast colours, are produced by a method invented by the exhibitor.

32 ECKARDSTEIN, ARNOLD, BARON OF, *Reichenau*—Producer.

Fleece of wool, exhibited on account of the regularity of the wool-staple.

[Within the last few years the importation of wool into the Zollverein exceeded the general exports of that material from it; but under this difference of circumstances, that whilst "common" and "middling" sorts of wool of low prices are imported from Austria, Poland, Russia, and Turkey, the Zollverein exports an immense quantity of wools of the finest quality from Saxony, Silesia, the Marks, and Prussia (for the manufacture of the best cloths and fabrics), to Great Britain, Belgium, and France. Stolpen, Lohmen, Klipphausen, and Nischwitz in Saxony, Panten, Borutin, Chizelitz in Silesia, Frankenfelde, and Möglin in the Marks—all these places have acquired for their wools in Europe a reputation. The Zollverein specimens in this department of production, many of which appear also in the English and other departments of the Exhibition, will meet with much attention.]

33 SCHWERIN, COUNT OF, *Wolfshagen, Uckermark*—Producer.

Fleece of a ram; fleece of a ewe.

The flock from which the above fleeces have been taken is of Saxon breed.

34 RUEFIN, A., *Rüstern, Liegnitz*—Producer.

Flax grown in Silesia, and "swingled" after the Belgian method, in the royal flax-cultivation school for Lower Silesia; heckled flax prepared in the same school.

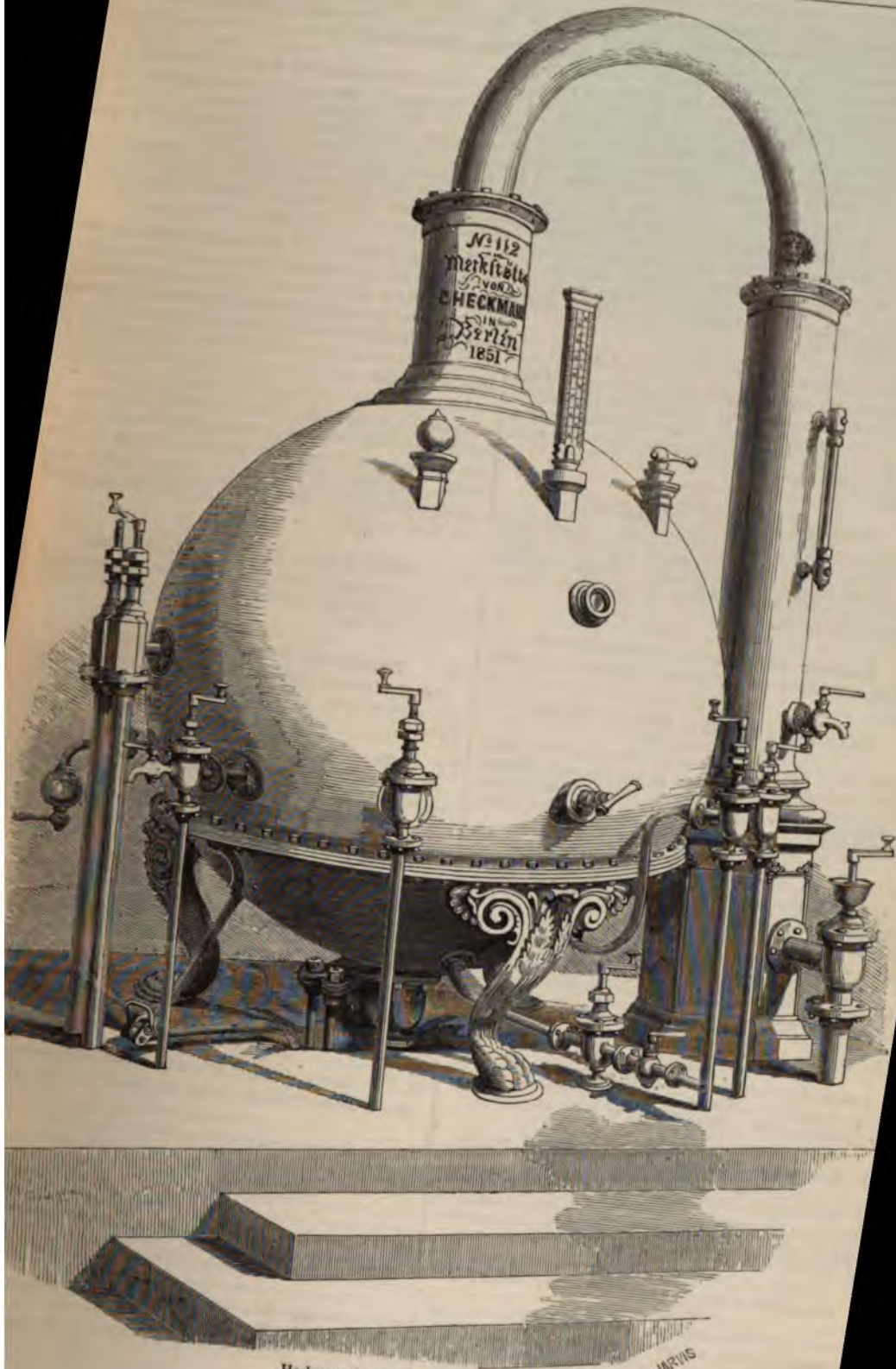
35 THE CORPORATION OF MILLERS, *Lissa*—Manufacturers.

Samples of ground millet; buckwheat groats; and oatmeal.

[The exports of the various kinds of grain, fibre and seed, flour, and other mill-ground stuffs from the Zollverein States, exceed the imports by a quantity equivalent in value to 18 millions of thalers, and those of wood by 3 millions of thalers yearly. Great Britain is the principal purchaser of these products of rural agriculture and forest cultivation. For her flax and her tow, likewise, Germany finds a market in England. Potatoes are not exported as such; but the principal consumption of this esculent takes place in distillation for the making of brandy. It is an error to imagine primary and important agricultural and horticultural products ill adapted for the purposes of a public exhibition. Various kinds of grain, of plants and seeds, are well entitled to attention by reason of their novelty, of the interest practically attaching to them, or of their utility, such as different species of peeled barley, flour, and batch made from them; sago, macaroni, and vermicelli; dyeing articles, as wood, accompanied by dyed materials to show the effect produced; flax, hemp, tow, wool, and other products manufactured into linens, cordage, hurdle-work, paper, wadding, coverlets, baskets, hats, and mats. All these, so far as they possess a character of commercial importance, have been considered worthy of exhibition in the Zollverein.]

- 36 ZIEGLER, BARON THEODORE OF, *Dambrau in Silesia*—Producer.
Three fleeces of wool, unwashed, from sheep of the genuine Spanish breed.
[Wool constitutes in Germany one of the most important productions of her husbandry; and the Zollverein States, more especially with reference to the consideration of quality and quantity, must be regarded as among the most important countries for the most valuable branch of production. The Zollverein produces annually 48 millions and a-half cwt. of German wools from about 22,000,000 sheep.]
- 37 LORENZ, GUSTAVUS, *Wolgast*—Manufacturer.
Samples of glue, exhibited on account of its clearness and perfect freedom from smell.
- 38 BOLZANI, A. M., *Berlin*—Inventor and Producer.
A hanging spinning-hive for silkworms, on the principle of beehives, to prevent the production of double cocoons.
Cocoons of silkworms.
- 39 KISZEWSKI, *Paradies, near Meseritz, Posen*—Producer.
Specimens of raw silk, made of 4, 5, 6, and 7 twisted threads. Produced upon the property of the seminary of Paradies.
- 40 TESSLER, D. F., *Stolp*—Manufacturer.
Two pieces of raw yellow amber, as cast up by the sea. Specimens of such dimensions are very rare; 100 dollars (15*l.*) are often paid for one pound.
Six pounds of amber beads.
Pieces of amber enclosing insects.
[From the researches of Dr. Karl Thomas it appears that under a nearly horizontal stratum of alluvial sand and coal-bearing clay, on the Samlandic coast, lies a stratum of amber earth. This has been explored where it rises above the level of the sea, and carbonized coniferous wood is found in it with organic remains. From the amber bed on the coast of Dirschkeim, extending under the sea, a storm threw up, on 1st January 1848, no less than 800 lbs. The amber "fishery" of Prussia formerly produced to the king about 25,000 crowns a month. After a storm, or an unusually high tide, the amber coasts are crowded with gatherers. Large masses of amber are occasionally cast up by the waves.—R. E.]
- 41 TESSLER, C. L., *Stolp*—Manufacturer.
Piece of wood of the amber-tree; specimens of yellow amber as found under ground, and as thrown up on the shores of the Baltic Sea.
Set of yellow amber ornaments, consisting of necklace, bracelets, brooch, and pendants, of milk-white colour.
Amber necklace and cigar mouthpiece worked clear.
Cigar mouthpiece worked dim; chibouque mouthpiece.
Smelling bottle; stand with two smelling bottles.
Snuff-box set in gold with the miniature of Frederic II.
- 42 FREIHERR VON LUETTWITZ, *Simmenau, near Ippeln*—Producer.
Samples of unheckled flax; extensively cultivated at Ippeln. Fleeces of wool, from the flock of the exhibitor.
- 43 GRÜNE, WILLIAM, jun., *Berlin*—Manufacturer.
Newly-invented composition for dyeing wool; also patterns of woollen yarns of various colours dyed with it.
- 44 HEYL, J. F., & Co., *Berlin*—Manufacturers.
Specimen of colours, in paste, for painters and paper-hanging manufacturers; chemical substances and various boxes of colour.
- 45 BRÜNECK, OBERBURGGRAF VON, *Trebnitz*—Producer.
Fleece of a ram and of a ewe of the merino breed, from the exhibitor's flock at Trebnitz.
- 46 BRÜNECK, OBERBURGGRAF VON, *Bellschwitz, near Rosenberg*—Producer.
Fleeces of wool, indiscriminately selected.
- 47 LEHMANN, ROBERT, *Nitsche, near Kosten*—Producer.
Fleeces of fine raw wool.
- 48 HOLTZSTAMM, BAILIFF, FREDERICK, *Berlin*—Producer.
Samples of silk-like vegetable particles, exhibited to show that such parts of plants may be employed in designs for the manufacture of articles, as a substitute for silk. Extracted by the exhibitor from plants found in Prussia and other countries.
- 49 FRIEDRICH, C., *Potsdam*—Manufacturer.
Park-carriage or phaeton.
- 50 GEYERS & SCHMIDT, *Goerlitz*—Proprietors.
Black and coloured broad cloths. Ladies' cloths, black and blue. Broad buckskin.
- 51 WURDEN, C. A. VON, & Co., *Grabow, near Stettin*—Manufacturers.
A complete vertical steam-pump, with double working piston, &c., instead of the usual valve.
- 52 HECKMANN, C., *Berlin*—Manufacturer.
Vacuum boiling apparatus of 6 feet diameter, with copper (double bottom) and tubes, for sugar refining; with manometer and thermometer. The copper and brass plates belonging to the apparatus, as well as the founding of the brass, were executed by the exhibitor.
The apparatus contains 80 cubic feet, Prussian measure (equal to 87 cubic feet English), sufficient for 245 loaves of sugar, at 30 lbs. weight each; it boils these loaves in 1½ hours, out of clarified mixture of 30 "Beaumé." Applicable for the manufacture of cane and beet sugars.
This apparatus is represented on the next page.
- 53 BONARDEL BROTHERS, *Berlin*—Manufacturers.
Jacquard machines for various numbers of hooks; machine for striking out patterns for jacquard work; machine for cutting corks.
- 54 DOEFFEL, T., *Berlin*—Manufacturer.
Frill machine. A plaiting-machine for bobbinet and laces.
- 55 LEONHARDT, J. EDWARD, *Berlin*—Manufacturer.
A newly-invented type-founding machine. Zinc as well as copper moulds can be employed in it without any alteration. Exhibited on account of the speed; the machine producing 4,000 types per hour.
- 56 WINTER, FERDINAND, *Berlin*—Manufacturer.
Two Jacquard weaving-machines; improved by the exhibitor, the hooks being so placed that they cannot turn when the machine is at work.
Two levers, belonging to the above-mentioned machines.
- 57 THOMAS, HERMANN, *Berlin*—Producer and Inventor.
A longitudinal shearing-machine, for shawls, with beating apparatus.

PRUSSIA.



Heckman's Vacuum Boiling Apparatus.

JARVIS

58 HAMANN, A., *Berlin*—Inventor and Manufacturer.

A turning lathe of German material, exhibited on account of its cheapness; the bed 4 feet long, $4\frac{1}{2}$ inches broad, and $4\frac{1}{4}$ inches high, with head-stocks 6 inches high, to the centre; 12 screw patterns and chisels; a plate with 8 divided rings and index; iron fly-wheel, to be turned by the foot; sliding and common rest; and other rest for supporting in case of boring with a drill, to bore chucks. A small rest with round pivot, attached to a sliding bed with holders for chisels and drills. A drilling-frame for ornaments. Upon the spindle are fixed, a universal chuck of 11 inches, with 4 stoppers; a smaller one of 8 inches, with holders moved by screws; an oval chuck; an eccentric chuck; a wire chuck with 3 holders, for wire of 1-3rd inch diameter. Chucks of wrought iron with 8 screws, 2 hollow chucks, chuck in the form of a drill, and chuck with a wood screw, 1 drill, 1 centre chuck, and 1 key.

59 RENNER, S. B., jun., *Breslau*—Manufacturer.

Specimens of a zinc roof after the construction of the exhibitor, which requires only a very small inclination, and by which the zinc can expand and contract according to the temperature. The fastenings of the plates withstand the most violent storms.

Models of the same on a similar scale.

60 GEHMANN, T., *Berlin*—Manufacturer.

Priming-pin rifle-gun, inlaid with silver, half stock and hair trigger. Rifle, with full stock and hair trigger, arranged to receive a hunting-knife. Double-barrelled gun, with grooved barrels inlaid with gold and silver. Shooting implements.

61 LUEDLICH, WILHELM, *Posen*—Manufacturer.

Rifle, with screw-driver, powder measure, and bullet mould.

62 OHLE, ERNST FREDERIC, Heirs of, *Breslau*—Manufacturer.

Samples of shot-tubes made by the hydraulic press, tinned inside and outside, and of ten different calibres. Pressed wire of different diameters. Red lead and litharge carefully prepared. String of bullets. Sheet lead tinned by an improved method:—all of Silesian lead.

63 GRZYBOWSKI, H., *Potsdam*—Manufacturer.

A gun of fine workmanship, in a case of rosewood, mounted in German silver.

64 KEHL, JOHN CONR., *Berlin*—Manufacturer.

A pair of pistols, highly finished, with implements for cleaning, casting balls, &c. Gun-barrels finished by the exhibitor.

65 STOLLE, DR. EDWARD, *Berlin*—Inventor and Patentee.

Patent chaff-cutting machine for straw and other vegetable substances, containing a new application of vulcanized India-rubber. Manufactured by F. Thiele, Berlin.

66 BRUCKISCH, WILHELM, *Koppitz, near Grotkau*—Proprietor.

Beehives on the Dzieron system, out of which the wax, honey, bees, &c., are easily taken. Erect double beehive; long low beehive; queen bee's basket; straw hive, entire, and divisible into parts; models of the same.

67 SPRENGEL & HARTMANN, *Regenwalde, Pomerania*—Manufacturers.

Sowing-machine; drill-machine; Indian corn thrashing-machine; Flanders plough, altered by Schwarz; Pomeranian vibrating plough; Mecklenbourg hoe, with yoke; East Prussian scarifier, with yoke; 16-share crooker; underground plough; water-furrow plough.

68 GUERLIN, PIERRE, *Berlin*—Manufacturer.

Night-clocks; cartel bronze clocks. Sundry clock-works. Regulator-works.

69 KRUEGER, AUGUSTUS, *Bromberg*—Inventor.

Electro-magnetic self-registering anemometer. A system of four electro-magnets, each encircled with 50 feet of copper wire. The galvanic circuit is completed by quick-silver every hour by means of clockwork.

By means of this instrument the eight different points of the wind may be discovered at any time and at any distance; at the same time, the direction of the wind can be hourly written down by means of the clock.

[Hydro-electricity, which is the grand agent in operations of this kind, is different in the phenomena it exhibits from that of dry electricity, or that shown by an electrical machine. For whilst the latter exhibits its most remarkable properties, by accumulation, even at rest, as in the charged jar, the electricity of the galvanic battery is scarcely perceptible, unless that which is called the circuit be complete; which is the case when the poles of the galvanic battery are connected by a continuous piece of metal, as a wire, or other conducting substance, as water, then considering the battery as a conductor, and hence the circuit is completed. The electricity, during the time the battery is in action, moves through the circuit. This conducting circuit may be of any form.—J. G.]

70 KUNST, JOHANN A., *Berlin*—Manufacturer.

Sets and half-sets of artificial teeth. Samples of enamel invented by the exhibitor for the manufacture of a single tooth or set of teeth.

71 BESSALIE, H. P., *Breslau*—Manufacturer.

Patent rosewood grand piano, with English mechanism and arrangement, for easier tuning and tightening the wires.

72 THIEMKE, A. F., *Berlin*—Manufacturer.

Brass travelling clock, in leather case, with stop and compensator to go eight days, strikes the quarters and hours, and repeats at every quarter the last hour.

73 GURICKE, B., *Zossen, near Berlin*—Inventor and Manufacturer.

Grand piano in rosewood, with powerful repeating mechanism. The mechanism patented in 1849.

The piano was wholly constructed by the exhibitor himself.

74 SIEGERT, C., *Stettin*—Manufacturer.

Complete vacuum-apparatus on a wooden stand; double working air-pump, with a wooden stand, belonging to the above.

75 SEEMANN, GUSTAV, *Warmbrunn*—Manufacturer.

Small house-clocks, exhibited for beauty and execution.

76 BAUMANN, THEODOR, *Berlin*—Inventor.

An instrument for ascertaining the length of measures, after Bessel's mode. The micrometers are placed on a strong mahogany beam, and the slide, which carries the two measures to be compared, is so arranged that it moves them exactly behind one another in the micrometer line, and there retains them. One perfect comparison (which consists of eight measurements, to be executed 4 times in 24 hours) suffices to ascertain the length of 3 feet (1 yard) to within 0.0002 lines; this requires only half an hour.

Two-yard measures, one of which represents the lawful and accepted measure; the other a copy, to be compared with the former.

ET, F. A., *Barth, near Stralsund, Province of Pomerania*—Manufacturer.
 plates, with divisions, applicable for observations microscope.
 micrometer for telescopes, with clear lines in horizon.

IDE, FRIEDRICH, *Berlin*—Manufacturer.
 (Agent, Mr. Oertling, London.)
 omical regulator, with linchpin and weight of 1/2 lb. of wrought-iron, and polished wooden case.
 romometer in pieces, in a polished case.

POKORNY, J. A., *Berlin*—Manufacturer.
 chine of iron.
 nfernalis mould, with twelve grooves.
 stars of iron.
 s' decoction spirit lamp.
 us' lamp, with brass base and plate of china.
 ed Berzelius' lamp.
 ster, after Pepys.
 le-gun and pistol.

STERMANN & Co., (Proprietor of the firm, G. Willmanns) *Berlin*—Manufacturer.
 pianoforte (rosewood).

LOTTIG, C., *Berlin*—Manufacturer.
 ng instruments.
 ic telescope.
 machine.
 ster, for ascertaining the distance of sight in spectacle glasses.
 d ring to demonstrate the expansion of metals

'mathematical instruments, of German silver.
 'mathematical instruments, in brass.
 ith instruments for drawing.
 ; obscura.

ALTZER, ADOLPH, *Frankfort on the Oder*—Inventor.
 lodion, a six-octave keyed instrument, with metal r tongues, caused to vibrate by means of bellows.
 us can be tuned several notes higher or lower rning of a key, fixed to a micrometer screw. A "o," or "deccrescendo," can be produced by means ial.
 g clocks, which go a year.
 um clock, indicating the variation of the time at fferent places.
 vention of clocks has been ascribed to Boethius, but clocks like those now used are of later in-
 The first on record is one at Bologna, in 1356.
 Wyck, a German, made clocks about 1364; the their machinery is preserved. Clocks were pro-
 duced into this country about 1368, by Edward , and became common in the fourteenth century.
 1 clocks were invented in 1641, by Richard ondon. At first, in contradistinction to the sun-
 r were called nocturnal dials.]

HME, J. F., & Co., *Berlin*—Manufacturers.
 -acid apparatus of platinum.
 ice for chemical analysis.
 tus for the polarization of light; employed for 3 substances.
 np, with oblique action.
 sulphuretted hydrogen apparatus, of glass.
 pe apparatus of platinum.
 s for weighing 100 grains, 50 grains, and 25

m bowls.
 m crucibles, with lids.

Berzelius and other chemical lamps, Mohr's balances; and a number of articles for chemical, philosophical, and pharmaceutical purposes.

84 LUPFOLD, —, *Stettin*—Inventor.
 Instruments for accoucheurs, composed of steel, ivory, and German silver, after Professor Busch's plan, improved by the exhibitor, by a head-screw, which, by turning the instrument by means of the hindermost head-screw, can be easily taken away and replaced.

85 GOLDSCHMIDT, S., *Berlin*—Manufacturer.
 An assortment of surgical and philosophical instruments, bandages, artificial limbs, syringes, and a magnetic apparatus.

86 REIMANN, L., *Berlin*—Manufacturer.
 Balance, in a rosewood case, which weighs from one milligramme to one kilogramme; that is, from 1/10 of a grain to 2 1/2 lbs. avoirdupois. The middle or suspension knife-edge rests upon a polished stone, and the scale-knife edges, &c., are so arranged that the balance can be used without opening the case.

Set of gramme weights, of brass, gilt by galvanic process, from one gramme to one milligramme, with ivory forks and pincettes.

[This balance is remarkable for sensibility, as it turns with about the millionth part of the extreme weight which it can weigh; but it is not equal in this respect to the balance made by Ramsden for the Royal Society, which is capable of weighing 10 lbs., and turning with one-hundredth of a grain, or the seven-millionth part of the extreme weight. The necessity of enclosing such delicate instruments in glass cases is manifest; but even in such circumstances they are affected by surrounding objects. Speaking of Ramsden's balance, Dr. Wollaston is reported to have said that when Mr. Pond was making some observations with it, he found its indications affected by his position relatively to the arms; the radiation of heat from his body causing the arm to which he stood nearest, to preponderate.—J. G.]

87 OERTLING, AUGUST., *Berlin*—Inventor. (Agent in London, Mr. Louis Oertling, 13 Store Street.)
 Chemical balance, with weights.
 Balance for chemical and physical purposes, with weights, containing arrangements to weigh all descriptions of substances, and to ascertain specific gravity.
 Balance for chemical and physical purposes, in large dimensions, with weights.
 Hudley's sextant, 7 1/4-inch radius.
 Hudley's sextant, 5-inch radius.
 Reflecting goniometer, of a new construction after Wollaston, with improvements by Mitcherlich and Poggen-dorf.

88 HOFFMANN & EBERHARDT, *Berlin*—Merchants and Manufacturers.
 Complete assortment of apparatus and articles for chemical, philosophical, and pharmaceutical purposes.
 Balance-beams, horn spatulae and spoons, glass and metal cocks, test cylinders, blow-pipe, polished spatulae, diamond pen to write on glass, stoppered bottles, receivers for air-pumps and gas, spirit lamps and retorts.
 Microscopes. Model of a telegraph for schools. Polarisation apparatus, diamond mortar of steel, thermo-electric chain, model of a steam-engine for schools, air pumps, Berzelius lamps, sun-dial for Berlin; various small articles in glass, &c., as funnels, corkscrews, &c.

89 BUSCH, E., *Rathenow*—Manufacturer.
 Spectacle settings and glasses.
 Telescope settings.
 Assortment of lupines, opera-glasses, and daguerreotype heads.
 Large telescope, with foot, and various others. Ear trumpet.

- 90 RUMMANN, A., *Eulam, near Landsberg, on the Warthe*—Manufacturer.
A guitar.
- 91 VOELKEL, J. G., & Co., *Langenbielau and Breslau*—Manufacturers.
Pieces of cotton stuffs for clothing, red inlet, Jacquard ticks, and bed-ticks. Table-cover.
- 92 DIERIG, CHRISTIAN, *Langenbielau, near Reichenbach, Silesia*—Manufacturer.
Jacquard diaper, fast colours, made of a warp of double-cotton yarn, united with English machine yarn; the same made of single-cotton twist, warps united with English machine linen yarn. Jacquard diaper, made of Chinese grass; the same woven of blue fancy silk and English machine linen yarn. Pattern of bed-tick, warp of crimson organzine silk, united with bleached Chinese grass yarn. Black and coloured glazed cotton shirtings.
- 93 NAUEN, LOEWE, & Co., *Berlin*—Manufacturers.
Various pieces of calicoes, printed in sundry manners. Woven by power-looms in Berrberg and Marklissa in Silesia, and bleached and printed at Berlin.
- 94 MENTZEL, Royal Prussian Privy Councillor of the War Department, *Berlin*—Proprietor.
A variety of samples of blue and grey military cloths, such as are supplied for the clothing of the Royal Prussian army.
Blue cloths :—
Patterns as used from 1817 to 1821, 1821 to 1824, 1824 to 1849, and 1849 to the present time.
Grey cloths :—
Patterns of the time previous to 1817, and as used from 1817 to 1821, 1821 to 1827, 1827 to 1829, 1829 to 1831, 1831 to 1849, and 1849 to the present time. Chiefly manufactured in the provinces of Brandenburg and Silesia.
- 95 FABIAN, C. G., *Humboldtswau, near Breslau*—Manufacturer.
“Pine-needle wool” for upholstery, intended to guard against moths, and for wadding; sample of the same, dyed black, to imitate horse-hair. “Pine-needle wool” wadding mattresses, and cover. “Pine-needle wool” bolster and soles, combined with other materials. “Pine-needle wool” oil, used for medicinal purposes; extract for baths, &c. “Pine-needle wool” soap.
[Dr. Lindley observes, with reference to the article here described as “Pine-needle wool,” that the only woolly tissue belonging to coniferous trees with which he is acquainted is a small quantity that covers their buds. If the articles exhibited are really what they profess to be, most probably the wool was obtained from this part of the pine-tree. Its medicinal properties, if they exist, are due to the resinous matter exuded by every part of the tree from which this “wool” is said to be derived.—R. E.]
- 96 WALD, C. F. & SON, *Zilenzig*—Manufacturers.
Woolen yarns, dyed and white, three and four fold.
- 97 ITZIGSOHN, MARCUS, *Neudamm*—Manufacturer.
Broad-cloths, light grey, grey mixture, and blue mixture. Grey mixture cloth, finished, quality as used by the Prussian military for cloaks and trousers.
Leather-coloured cloth, as used for coaches, finished.
- 98 BEHREND & SCHMIDT, *Berlin*—Manufacturers.
Specimens of woolen cloth.
- 99 HABERLAND, G. AUGUST, *Finsterwalde*—Manufacturer.
Specimens of black cloth.
- 100 GEISSLER, CHARLES SAMUEL, *Görlitz*—Manufacturer.
Woolen cloths, black, bronze, purple, blue, bottle-green, marine-blue, olive, red, green, dyed in the wool, gold, and bronze; manufactured out of Silesian wools.
- 101 RUFFER, S. B., & SON, *Liegnitz, Silesia*—Manufacturer.
Imperial brown and blue woolen cloths dyed in the wool. Electoral woolen cloth, Gentian blue, dyed in piece; Segovia olive colour, dyed in the wool; Royal black, dyed in piece; and cashmere, dark-green, dyed in the wool.
- 102 SCHEDER, J., & Co., *Schweidnitz*—Manufacturers.
Specimens of buckskins and cloths for breeches, &c. Exhibited for cheapness of production.
- 103 LUTZE BROTHERS, *Cottbus*—Manufacturers.
Specimens of mulberry, olive, and black cloths.
- 104 COHN BROTHERS & HERMANN, *Berlin*—Manufacturers.
Woolen, cotton, and silk mixed stuffs; woolen, plain, and fancy stuffs; fancy woolen, and woolen and cotton mixed stuffs.
- 105 COCKERILL, WILLIAM, *Guben and Cottbus*—Manufacturer.
Raw and coloured carded yarns, spun of Pomeranian wool.
- 106 BERGMANN & Co., *Berlin*—Manufacturers.
Patterns of worsted zephyr yarns, best quality. The wools used for these zephyr yarns were manufactured by the United Spinning Company at Gotha.
- 107 FELLER, J. G., & SON, *Guben*—Manufacturers.
Black cloths. Black royal. Skeins of yarn employed in the manufacture of the black royal. The whole exhibited on account of their cheapness combined with quality. Manufactured from the raw wool, which is of Silesian, Pomeranian, Marchian, and Prussian growth for the broad cloths; the royal is manufactured from a mixture of Marchian and Australian wools.
- 108 SCHLIEF, SAMUEL, *Guben*—Manufacturer.
Various specimens of black cloth of Silesian and Posen wool, exhibited on account of the beauty of the work, and cheapness. Black satin.
- 109 FRIEDHEIM, S. M., & SONS, *Berlin*—Manufacturers.
Pieces of figured Orleans. Pieces of gros-de-Berlin. Pieces of plain Orleans.
- 110 HOFFMANN, ERDMANN, *Sorau, Lusetia*—Manufacturer.
Specimens of olive-green, bronze, and blue ladies' cloths. Black cloth.
- 111 TRAUOGOTT MENDE & SON, *Finsterwalde*—Manufacturer.
Pieces of black cloth, various; manufactured out of Silesian wool.
- 112 BORMANN, F. A., *Goldberg in Silesia*—Merchant and Manufacturer.
Various pieces of cloth, dyed in the wool, black and blue, dark green and red.
- 113 MARX & WEIGERT, *Berlin*—Manufacturers.
Cashmere shawls, in sundry colours and designs. Mohair, woolen, and cotton velvets.
- 114 LEVIN, HENRY, & SONS, *Berlin*—Manufacturers.
Cravats, silk, silk and cotton mixed. Waistcoats, silk, worsted and silk, and embroidered. An assortment of silk and cotton plush. Loose patterns of sundry silk, and silk and cotton articles.

- 115 **WEIGERT & Co.,** *Schmideberg, Silesia*—Manufacturers. (Agents, Messrs. Smithson & Co., Fenchurch Street.)
Cashmere shawls:—Green velours d'Utrecht, first quality. Coloured and figured velours d'Utrecht, various qualities. Castorine. Pallas, various qualities. Tallupp. Transparent. Leopard. Oval cloaks worked on the loom.
- 116 **ORHME, C. W.,** *Berlin*—Manufacturer, Inventor, and Proprietor.
Plush for hats; exhibited for colour and texture; manufactured of Italian and French silk, and of cotton spun in England.
Patterns of silk plush for caps.
- 117 **KAUFFMANN, HERMANN,** *Berlin*—Inventor and Manufacturer. (Agent in London, Mr. Carl Schwebemeyer, 314 Oxford Street.)
Plush for furniture, in real colours. Printed plush for furniture, designs of various colours.
Livery plushes, of various qualities.
Plush for coats, paletôts, and shoe garnitures.
A large assortment of cap plush.
Velours of cotton (Castorine).
A variety of other plushes.
- 118 **SCHÄRFF, ROBERT,** *Brieg*—Manufacturer.
Set of small ware, composed of broad and small silk and worsted borders, tassels and gimps, intended for a state chariot. Sets of small ware, less costly, intended for barouches. Various articles of small ware, as bridles, gun-ribbons, girths, &c.
- 119 **GABAIN, G.,** *Berlin*—Manufacturer.
Various silk goods. Silk and cotton, silk and gold, and silk and silver goods; of original designs.
- 120 **KIRSTEIN, CHARLES,** *Hirschberg, Silesia*—Proprietor.
Linen, made of hand-spun yarn. Linen, warp, of machine-spun yarn, weft, of hand-spun yarn. Half linen. Handkerchiefs, of hand-spun yarn.
Manufactured by the weavers in the neighbourhood of Hirschberg, Prussia.
- 120A **KIRSTEIN, CHARLES,** *Hirschberg, Silesia*—Proprietor.
Samples of drugs collected in the neighbourhood of Hirschberg, viz.:—Lovage, hellebore, valerian, Iceland moss, angelica root, bilberries.
- 121 **SKYLEBS, GOTTFRIED** (Heirs of), *Wüstewaltersdorf, Silesia*—Merchants.
Bleached $\frac{1}{2}$ yard linen, for the South American markets.
- 122 **WEBSKY & SON,** *Wüstegiersdorf, Silesia*—Manufacturers.
White linen. Nos. 101 to 109 are exported to America under the name of Platillas.
- 123 **KAUFFMANN, MEYER,** *Schweidnitz*—Manufacturer.
Half-linen Jacquard drill, red, violet, and reddish-grey.
Half-worsted damask for furniture.
Half-linen and worsted stuff for apparel.
- 124 **RIMANN & GEISLER,** *Hirschberg, Silesia*—Proprietors.
Four pieces of bleached linen, warp of machine yarn, weft of hand yarn.
- 125 **ENGEL, ERNST, jun.,** *Gorlitz*—Manufacturer.
Hunting-bag made out of hemp pack thread, with ornaments.
Samples of two and three cord extraordinary fine hemptwine.
- 127 **STILLER, A. E. & SON,** *Sorau*—Manufacturer.
Linen and half-linen damask ticking; table-cloth and napkins.
- 128 **KRAMSTA, C. G., & SONS,** *Freiburg, in Silesia*—Manufacturers.
Raw and bleached linens, as well as creas and platilles royales. Dessert napkins. Linen handkerchiefs. Diaper, jacquard, and damask table-cloths and napkins. Raw linen machine yarn. Sample of starch.
- 129 **PRENTZEL, JOHANN CHEYS,** *Greiffenburg, Silesia*.
Various specimens of linen pocket handkerchiefs with woven cotton borders, worked on a common loom.
- 130 **TSCHORN & BÜRGEL,** *Wüstegiersdorf*—Manufacturers.
Four pieces of raw and white household linen; Nos. 1 and 3, 2,400 warp threads; Nos. 2 and 4, 3,200 threads.
- 131 **SCHILDKNECHT, C. F.,** *Berlin*—Manufacturer.
Four pieces of satin d'Amérique, manufactured out of the *Agave Americana*, for furniture. Shawls of various fabrics.
[*Agave Americana* is the botanical name of the splendid American aloe, fabulously said to flower only once in a century. The roots and leaves of this plant contain ligneous fibre, separable by steeping and bruising. It is also used for making paper, and furnishes several valuable products. The ligneous fibre constitutes the basis of the tissue referred to.—R. E.]
- 132 **SUSSMANN & WIESENTHAL,** *Berlin*—Manufacturers. (Agent in London, Charles Holland, 41 Finsbury Circus.)
Assortment of various articles, manufactured by the exhibitors from the raw material, including plaids, broché, fides, umbrella, and lucille, manufactured out of cotton warps and woollen-yarn wefts; Esmeralda and umbrella China, out of cotton and silk warps, with woollen yarn and silk weft; tartan, all wool, warp and weft.
- 133 **MEYER, MAX, & Co.,** *Berlin*—Manufacturers.
Coloured cotton and silk, mixed plush. This article is exported to North America.
- 134 **OPDENHOFF & HARTUNG,** *Berlin*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)
Shawls of various kinds. Plaid, tartan, &c. Woven and finished by the exhibitors. The woollen yarns used are of German make, except two articles, which are worked partly with English yarns.
- 135 **PINTUS, H., jun., & Co.,** *Brandenburg*—Manufacturers.
Embroidered Llama stuff; Cachemir mixed with silk; double Chiné; Chiné; ermin; Cachemir; and imperial. Manufactured from carded yarns.
- 136 **LEHMANN, D. J.,** *Berlin*—Manufacturer. (Agents, Messrs. Ullmann, Hirschhorn & Co., 2 Walbrook Buildings, London.)
Velours d'Utrecht, for furniture, &c.
Plush for caps, waistcoats, collars, coats, and linings. Square and double long shawls.
Stuff for cloaks.
Velvet printed table-covers.
The velours d'Utrecht and plush are manufactured partly of linen and partly of double cotton warps, with mohair yarn weft.
The shawls are manufactured some of wool and some of cotton warps, with carded yarn weft.
The stuff for cloaks is made in the same r

137 COHN, PHILIPP, & Co., *Berlin*—Manufacturers.
Assortment of woollen, half-woollen, and woollen with cotton and silk mixed, square and long, shawls.

138 LEHMANN, HEINRICH, *Berlin*—Manufacturer.
An assortment of deerskin, kid, and lambskin gloves.

139 KOENIG, L., *Berlin*—Manufacturer.
A fur camaile, composed from tails of narz, lined with minever.

140 LUSK, ADOLPH, *Berlin*—Manufacturer.
Walking-sticks, riding whips, life-preservers, of whale-bone and cane, covered with leather.

141 BECHERER, JOHANN, *Berlin*—Manufacturer.
Specimens of horse and other whips.

142 GRUTZMACHER, G. F., & SONS, *Stettin*—Manufacturers.
Brown calf-skins.

143 KOPPE, ALBERT, *Berlin*—Manufacturer.
Assortment of card-board, stone, wood, and leather fancy articles. Alarums; desks with mechanism; needle-sharpeners; a Christmas tree, the cupola can be transparently illuminated by the lamp inside of it; a night-lamp stand.

144 BEYERHAUS, A., *Berlin*—Manufacturer.
A print in Chinese characters. 4,200 punches in these Chinese characters have been cut in steel for the American Missionary Society in New York. The types are divisible on a new perpendicular system; and form, by combination, 24,000 different characters.

145 EBART BROTHERS, *Berlin*—Manufacturers.
Hand papers for bank-notes, &c., and machine papers sized in the pulp state with animal glue, from the paper mill at Speckthausen, near Neustadt, Eberswald. The same, highly sized.
Samples of glazing-boards and carton-pierre, for roofing, from the paper mill of Weitlage, near Neustadt, Eberswald.

146 GLANZ, P., *Berlin*—Manufacturer.
An assortment of sealing-wax, in various colours and of various qualities.

147 LIEPMANN, JACOB, *Berlin*—Inventor.
Mass of colour, for printing in oil; $1\frac{1}{2}$ inch thick, and will serve for 1,000 copies; the masses can be formed to serve for 100,000 copies.

[The masses here exhibited are intended to form a convenient substitute for the ordinary semi-fluid printing inks.]

Relief plate, upon which the printing takes place, being a cast from a surface painted with a brush,

Printed picture, from the two foregoing plates, representing the Magdalen, after the original picture of Murillo in the Royal Museum, Berlin.

Another mass of colour, forming a border, and intended for ornamental printing.

Specimens printed by the composition.
Specimens of the different methods of printing; portrait of the painter Kupetzky, printed upon plaster of Paris; picture of the Saviour on wax ground; another on paper, with oil ground; portrait of Frederic the Great upon paper, with wax ground.

148 DECKER, RUDOLPH LUDWIG, *Berlin*—Manufacturer.
The Bible, in royal 8vo, as printed for the General Bible Society in Prussia.
The same, in small octavo, on finer paper.

The Psalms and New Testament. Ministure edition.
The same, on finer paper.

Five volumes of the works of Frederic the Great, in large 4to. This edition was printed by order of His Majesty the reigning King of Prussia.

Sixteen volumes of the same works of Frederic the Great, in large 8vo. These editions were superintended by the Royal Academy of Sciences. The former is not for sale.

Specimens of printing-types.

The New Testament, after the German edition of Dr. Martin Luther, of the year 1545.

This edition of the New Testament, in large folio, was undertaken by the exhibitor, and executed under his particular direction. Only one hundred copies have been struck off. The paper is of Berlin manufacture. The types were cut in steel by Johannes Schilling. The drawings of the initials are by Adalbert Müller. The wood-cuts were executed by Professor Unzelmann, M. Otto Vogel and M. Albert Vogel, and under their direction. The illustrations were designed by Cornelius and Kaulbach; drawn on wood by M. L. Burger, and executed by the above-named engravers. The binding in velvet is by Mr. Vogt. The silver ornaments on the cover and the clasps were designed by M. Adelbert Müller, and executed in embossed work by M. Netto.

The steel punches of the types engraved for the New Testament.

Printing-types as used for the same.

Printing-types of English characters.

Electrotype multiplications of wood-cuts and ornamented letters.

Specimens of brass rules, as manufactured at the letter-foundry.

Matrices in copper.

149 LEISEGANG, WILLIAM, *Berlin*—Manufacturer.

Album of velvet, gilt, containing forty-five leaves of paper, with lock. The method of gilding the velvet is patented.

150 OSTEN, L. V. D., *Stralsund*—Manufacturer.

Printed carpets; table-covers. Large and small pictures, printed upon muslin. These pictures may be washed, and the painting is said to be improved by the operation. Very rare copies of woodcuts, after Albert Durer. Packs of whist cards and cards for ladies.

151 WUTTIG, G. L., *Pulverkrug, Frankfort on the Oder*—Manufacturer.

Machine-paper, coloured or stained, in sundry sizes and qualities.

152 KCHN, CARL, & SONS, *Berlin*—Manufacturers.

Ledgers of different dimensions, bound in leather and morocco. Pattern card of ruled sheets. Large case of red morocco, for keeping copper-plates, prints, &c. Large portfolios and coloured sample sheets. Portfolios, for bills of exchange. Pocket-books, for paper and notes. Portfolios, in blue and brown morocco. Albums, in blue velvet and in morocco. Portfolios, with partitions and silk linings. Cigar cases. Porte-monnaies. Portfolios in quarto. Albums and books in octavo.

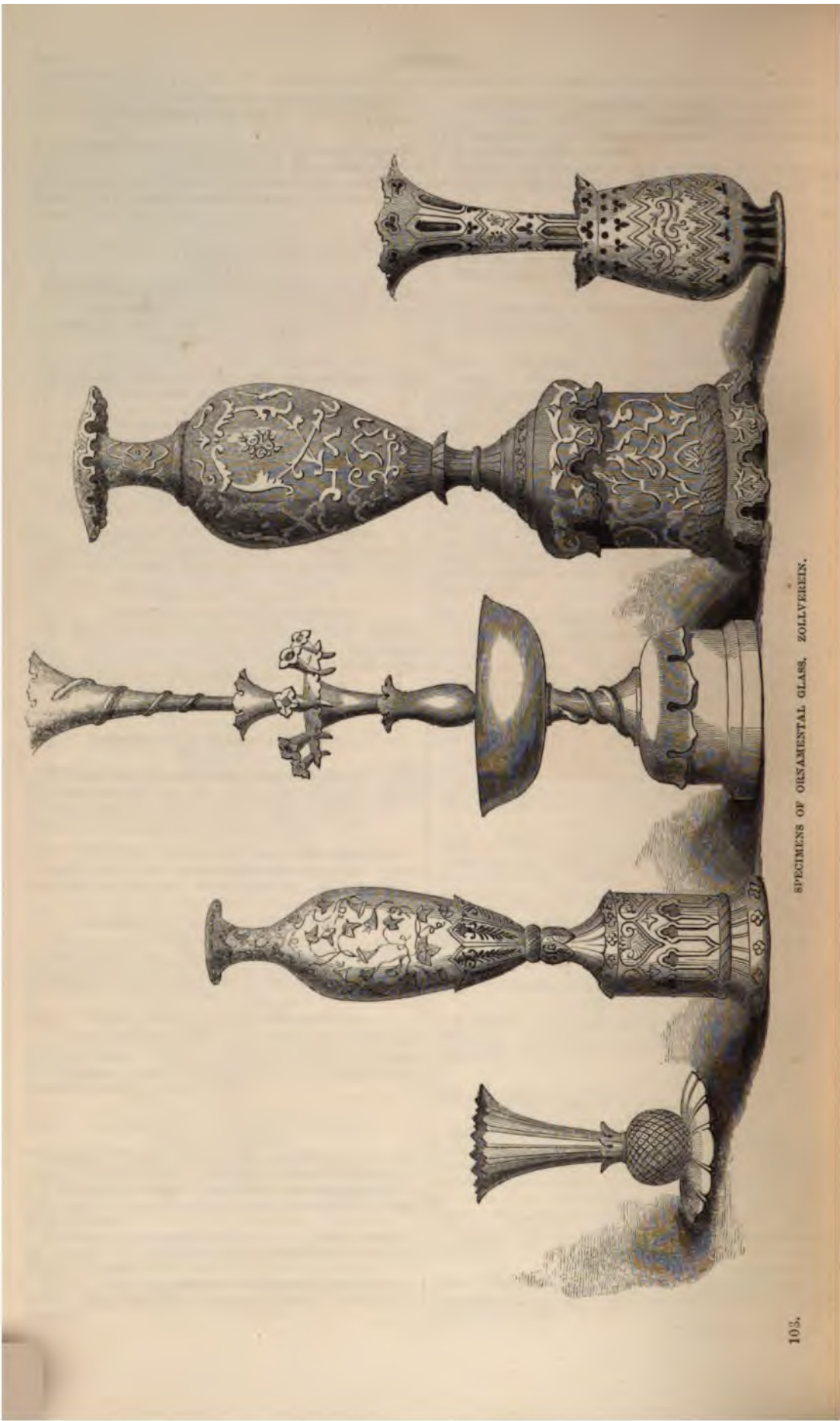
153 SCHAEFER, OTTO, & SCHEIBE, *Berlin*—Manufacturers.

Samples of ornamental papers. The drawings and patterns are partly original, partly imitations of older patterns. The plates from which these impressions were taken are prepared by the electro-type process from papier-maché moulds. Embossed and visiting cards. Specimens of papeterie in boxes and portfolios. Fancy envelopes.

- 154 **SCHOENING, HERMANN, Berlin**—Manufacturer.
Album, in dark red velvet, gilt.
Altar Bible, in morocco leather.
- 155 **WAGNER, J. G., jun., Berlin**—Manufacturer.
Proofs of engraving in copper, steel, metal, wood, and lithography, executed by the ruling and relief copying-machines of the exhibitor. These machines are frequently used in ornamenting cheques, &c., for greater security against imitation.
- 156 **MOESER & KUHN, Berlin**—Manufacturers. (Agent in London, Mr. Green, 17 Gough Square, Fleet Street.)
Specimens of letter-press printing in three or more colours, by a new process, and paper, used for colour printing, of a peculiar manufacture, by a new process.
- 157 **KARSCHLITZ, SIEGFRIED NOMME, Berlin**—Manufacturer.
An assortment of printed cashmere table-covers.
- 158 **TRAUTWEIN, T., Berlin**—Publisher.
Map of the industry of Central Europe, drawn on linen. The same, upon roller.
- 159 **STEPHAN, A., & Co., Berlin**—Manufacturers.
Pieces of cotton-twill dyed, partly without finish, partly glazed and embossed. Exhibited only on account of the colours and the finishing.
- 160 **SCHLEUSS, H., Berlin**.
Assortment of embroideries in mosaics, &c. A fire-screen.
- 161 **STIEF & HARRASS, Potsdam**—Manufacturers.
Specimens of embossed silk; the texture represents the Neptune grotto, built by Frederick the Great, at Sans Souci. These specimens deserve particular notice, on account of the superior workmanship. Designed by the exhibitors. The raw silk woven at Sans Souci, in 1848.
Gentlemen's silk cravats. Silk waistcoating. Pieces of silk and cotton waistcoating. Silk and cotton embroidered waistcoat. Silk embroidered waistcoats.
- 162 **SEIFFERT & Co., Berlin**—Manufacturer.
Berlin paper pattern, for embroidery.
- 163 **KÖNIG, C. A., Berlin**—Manufacturer.
Large carpet, embroidered in the cross-stitch manner, executed in silk and worsted, and filled with drawings referring to the Great Exhibition. Bed-screen, consisting of three parts, embroidered in wool and silk, after original drawings, with rosewood frames. Embroidery for a fire-screen on silk canvas, in the velours d'Utrecht fashion. Embroideries extra fine, petit-point in silk, in frame and glass. Child's bed-cover, filet-work in silk.
- 164 **BURCHARDT, B., & SONS, Berlin**—Manufacturers.
Various pieces of printed oil-cloth; the same, for table covers; painted window blinds; double floor-cloths, with and without borders; patterns of hat-linings; double linen oil-cloth for carriages; carpet; oil-cloth for sofas.
- 165 **LIPKE, W., Berlin**—Manufacturer.
Sofa and other carpets and rugs of machine-made felt; sofa carpets of woven texture.
- 166 **GRUENTHAL, —, Berlin**—Manufacturer.
Various paper patterns for embroidery:—Lady Jane Grey refusing the English crown; General Washington; David and Saul; Madonna and Child; Boy playing; seat and back of a chair, &c.
- 167 **LEHMANN, M., Berlin**—Manufacturer. (Agents in London, Messrs. Jonas Simons & Co., 46 Lime Street.)
Oil-cloths, printed with gold dust, and different colours. Round table-covers. Painted window blinds. Patterns of a new waterproof elastic cloth, for railway waggons, &c. Floor-cloth with border, painted like a rugged carpet. Common floor-cloth.
- 168 **NEBE, F. W., Berlin**—Manufacturer.
Berlin paper patterns for embroidered fire-screens, new composition.
- 169 **PAREY, C. F. W., Berlin**—Manufacturer.
Embroidered carpet, in wool.
- 170 **RUDLOFF BROTHERS (P. Truebe), Berlin**—Manufacturers.
Berlin paper patterns for embroidery, representing Cardinal Ximénés, Laban and Jacob, and Hagar in the desert.
- 171 **TODT, A., Berlin**—Manufacturer.
Paper patterns for embroidery.
- 172 **ADOLPHI, C. F. W., Berlin**—Manufacturer.
Ladies' boots of white satin, French and varnished leather, and goats' leather with waterproof soles, and shoes of yellow morocco and bronze leather and white satin. Ladies' slippers. Children's boots. Over shoes, with metal springs.
- 173 **SOMMERFELD, B., Berlin**—Manufacturer.
Embroidered altar-cloth.
Specimens of embroidery — Scotch landscape; and Moses in Midian.
Assortment of embroideries, on pocket-books, cigar-cases, porte-monnaies, &c.
- 174 **BECKH BROTHERS, Berlin**—Manufacturers.
Brussels carpet in Turkish style; Brussels carpet flower-pattern; Brussels carpet arabesque pattern, in one piece; and a variety of carpets with figures.
- 175 **DINGLINGER, A. F., Berlin**—Manufacturer.
Velours carpets. Rugs. Velours for travelling-bags.
- 176 **GLÖBER, LOUIS, Berlin**—Manufacturer.
Berlin paper patterns, "The Descent from the Cross," after Rubens. George Washington, and Albert, Prince of Wales.
- 177 **ANDRESEN, PETER, Berlin**—Manufacturer.
Pair of morning shoes, with embroidery in gold. Pair of riding boots, with white tops. Pair of waterproof boots, with black tops. Pair of cork boots, of varnished leather. Pair of boots, of calf leather. Pair of ball boots, for officers in the army. Boots of varnished leather. Boots and clogs of different sorts. Pegs, made by Mr. Mielert Stallschreiberstrasse, for fastening the soles of the boots instead of sewing them.
- 178 **FREYSTADT BROTHERS, Berlin** — Manufacturers. (Agents in London, Krohn Brothers, Bread Street.)
Silk-shag hats, worked upon felt and chip.
Lady's riding-hat, with veil.
- 179 **PLESSNER, S., Berlin**—Manufacturer.
Goat and doe-skin gloves. Washable kid gloves for ladies and gentlemen; the same, with only one principal seam. Ornamented gloves, for ladies. Braces, of fine wash leather. Silk braces.
- 180 **WOLTER, G. C., Berlin**—Manufacturer.
Coloured kid gloves for ladies and gentlemen; lamb-skin gloves for ladies; deerskin gloves for gentlemen. Ladies' dress and other gloves.—All of German manufacture.

- 181 SELDIS, E., *Berlin*—Manufacturer. (Agent in London, Mr. CARL SCHWEBEMEYER, 314 *Oxford Street*.)
An assortment of felt hats, silk-shag hats, black and coloured felt bonnets, imitated felt hats, imitated felt bonnets, and dolls' bonnets. Several of these articles are made of new material usually rejected. The form is in one piece without a seam.
- 182 LIETZMANN, J. C. H., *Rummelsburg, near Berlin*—Manufacturer.
Shoe vamps and legs, of various sizes and forms.
The leather from which these articles are cut is tanned by a patent process invented by the exhibitor, which is stated to render it durable and waterproof.
- 183 MUELLER, J. L., *Berlin*—Manufacturer.
Ladies' and gentlemen's boots for deformed feet. Feet and lasts modelled after nature.
- 184 PFEIFFER, C., *Berlin*—Manufacturer.
An assortment of single and double-soled boots and over-shoes.
- 185 SCHNEIDER, F., *Potsdam*—Manufacturers.
Lamb-skin, goat-skin, and kid gloves.
- 186 VASSEL, S., & Co., *Berlin*—Manufacturers.
Silk hats, for gentlemen and boys. White and grey beaver hats. White, black, and natural beaver ladies' hats. Silk riding hats, for ladies. Felt hats.
- 186a MOHR, W., *Berlin*—Manufacturer.
White satin boots. Boots of chamois leather. Ladies' clogs. Gentlemen's clogs, varnished leather. Enamelled leather boots and clogs. Calf-leather boots, complete, but internally fitted for a deformed foot.
Model of a deformed foot, externally resembling ordinary boots.
- 187 HENKELS, J. A., *Solingen and Berlin*—Manufacturer.
Three glass cases, containing a large assortment of table, hunting, pen, pocket, and other knives, daggers, sword blades, surgical instruments, &c., manufactured of refined steel, the produce of the smelting works of Siegen.
- 188 BARDFELD, CHRISTIAN, *Posen*—Manufacturer.
White and slate-colour reindeer-skin breeches. Deer-skin gloves and braces. Leather braces. Knee girths.
- 189 ARNHEIM, S. J., *Berlin*. (Agents, Krohn Brothers, 1 Bread Street, London.)
Iron-safe bureau. The large doors, cases, and locks, open and shut, notwithstanding their great weight, with perfect ease. Exhibited for workmanship.
- 190 ZOBEL, WILLIAM, *Berlin*—Manufacturer.
A variety of sliding lamps, of sundry dimensions, and regulator lamp, silvered by the electro-plating process. Brass lamps. Lamp with spring pressure, electro-plated. Lamp for cooking; and lanterns.
- 191 VON MINUTOLI, ALEXANDER, Councillor, *Liegnitz*—Proprietor.
Samples of Silesian marble plates, sketched by the exhibitor; executed by Mr. Laverdare, sculptor in Breslau.
Photographic copies of models for manufactories in clay, glass, or wood, executed by the photographer Birk, at Hirschberg.
Phelloplastic model of the ruins of a Gothic church; an attempt to execute Gothic architecture instead of Roman, in cork.
Parts of chimney-pieces in a greenish glaze and in a brown glaze, and gilt. A square plate of the same material.
- Brown glazed chimney-piece, to exhibit the application of clay formerly only used for pottery to finer objects. The designs and models were produced by the exhibitor and executed by Mr. Pockle.
Crystal glass decanter, after a sketch by the exhibitor; executed by the glass-painter Finsch, at Warnbrunn.
- 192 LOEFF, S., *Berlin*—Manufacturer.
Porcelain coffee machines and tea pots.
Porcelain sliding and table lamps.
The porcelain made at the Royal Manufactory, Berlin.
- 193 GAERTNER, AUGUST, *Stettin*—Manufacturer.
Cage for a parrot, in German silver.
- 194 KUMMER, K. W., *Berlin*—Inventor.
Globe in relieve, of 4 feet diameter, consisting of two hemispheres to be put together, with a bronzed pedestal of papier maché; proportion of elevation, 1:10. The exhibitor, in constructing this globe, has availed himself of the latest maps and of the suggestions of Professor Ritter. In the execution of the elevations, regard has been had not only to the summits of the mountains, but also to the highlands, rivers, and towns. Both the entire globe and single segments of the same are prepared for the blind, and for such as enjoy vision, in two editions, the one only with the names indispensably necessary, the other, with more detail, containing the names even of the smallest places, so that the roads of caravans may be traced on it.
- 195 ZOBEL, JULIUS, *Berlin*—Manufacturer.
Varnished tin articles, representing *Calla aethiopica* in blossom, with tin pots. Amaryllis, in blossom. Embossed fruit baskets. Bread baskets, with pierced edges; and with fine network. The first two articles embossed after nature, in tin-plate, by the exhibitor.
- 196 KOLESCH, H., *Stettin*—Manufacturer.
Iron safe. It is said the locks are so constructed that they cannot be opened by skeleton keys or any similar instruments; nor can they be opened by any one unacquainted with the secret, even with the right key.
- 197 LEHMANN, A. F., *Berlin*—Manufacturer.
Cast-iron balcony decoration; cast-iron crucifix, and altar candlesticks. Warwick vase. Group of warriors. Fruit basket. Jewel case. Small statues, busts, &c. Small cast bracelets, brooches, crosses, rings, &c., and various plated fancy articles, &c. Ornamental cast-iron fountain. This fountain is represented in the illustration on the next page.
- 198 LEWY BROTHERS *Frankfort on the Oder*—Manufacturers.
A variety of cast and japanned articles, consisting of lamps with pedestals, candlesticks, baskets, sugar-box, pails with covers, water-receivers for pipes, writing-desks, &c.
- 199 STOBWASSER, C. H., & Co., *Berlin*—Inventors, Manufacturers, and Proprietors.
A large assortment of japan articles, ornamented with paintings, in imitation of agate, malachite, tortoise-shell, &c. Tea-boards, caskets, bread-baskets, &c. Lamps, in German silver, bronze, brass and composition, gilt, &c.
- 200 EGELLS, F. A., *Berlin*—Manufacturer.
Cast-iron chimney piece, varnished; two side-pieces of cast-iron.
- 201 MUELLER, J. F., *Muncheberg*—Manufacturer.
Leather bridles, with steel bits and snaffles. Hunting pocket, with a net.





SPECIMENS OF ORNAMENTAL GLASS, ZOLLVEREIN.



Lehmann's Ornamented Cast-iron Fountain.

- 202 SCHWARTZ, C., *Berlin*—Inventor and Manufacturer.
A golden brooch, representing a lion fighting with a serpent, in brilliants and roses.
A golden bracelet, representing an angel resting on flowers, with diamonds.
A golden flexible bracelet, with four brilliants.
A golden flexible bracelet, with oak leaves and brilliant.
A golden brooch and a pair of studs, with oak leaves and brilliants.
- 203 SCHNEIDER, F., *Berlin*—Inventor.
Writing-stand, partly of gilt silver and partly of gold, under a glass cupola, upon a rosewood column.
Daguerreotype-plates, plated by galvanic process, and levelled without hammering.
- 204 WINTERFELD, JOHANN ALBERT, *Breslau*—Manufacturer
Articles in yellow and white amber: Vase of yellow amber; set of chess-men; set of ladies' ornaments of yellow amber; set of ornaments; pipes; ear-ring tassels; ear-rings; bracelets; knife and fork in a box; fruit-knives, with silver blades; paper-cutter; sets of buttons for ladies' dresses; tassels; hook-boxes; pen-holders; frames for knitting-needles; pen-knives; breast-pins; amber top with a meerschaum pipe; and various other articles in yellow amber.
- 205 JANTZEN, G. E., *Stolp*—Manufacturer.
A set of yellow amber ornaments chased with gold; the same, clear and pale.

Sewing-box of yellow amber.
String of yellow amber beads, with a cross hanging from it chased with gold.

Toilet table, bearing a tureen, two candlesticks, and six wine glasses, all of yellow amber.

[Amber is the fossil resin of various extinct species of coniferous trees, allied to the firs and pines of the present age. It is chiefly found on the southern coast of the Baltic.—J. L.]

206 STRAHL, OTTO, *Frankfort on the Oder*—Manufacturer.

Gilt and decorated fruit-vases. Coffee and tea-service. Several gilt and decorated cake-dishes, cabarets, &c.

Assortment of white crockery ware of the best description, consisting of dishes, tureens, saucers, plates, cake-dishes, &c.

207 BERGMANN, WILLIAM, *Warmbrunn, near Hirschberg, Silesia*—Producer.

A collection of octagonal and oval topazes from the Giant Mountains, valuable on account of the size, purity, and colour of the stone: it may be considered as a scale of the colours of the topaz. Large topaz seal-stamps. Large topaz cane-heads. Impressions of seals.

208 THE GLASSWORKS OF THE COUNT OF SCHAFFGOTSCH, *Josephinenhütte, near Warmbrunn*.

Flower decoration. Colossal ruby vases.
Enamel-like flower-vases. Ananas and other vases.
Aquamarine enamel vases, with gilt decoration. Sugar-water set.

Violet-vases. Decanters. Large cups with covers.
Vases for cabinets. Small vase with handle.
Chalice-glasses, with carved arabesques, and with handles carved.

Crystal-enamel vases.
These specimens are exhibited on account of the clearness of the cutting, and the polish of the gilding, as well as for the beautiful work of the various glasses and vases in the Venetian style.

Specimens of these articles are represented in the adjoining Plate 103.

[The German coloured glass, although extensively imitated, has always maintained that good estimation which it possessed long ago. It has realized a high point of perfection in colour, grinding, and form. In what is called "white glass," or "lead glass," our German industry requires prompt resuscitation and careful support, if we would not see it altogether overwhelmed and suppressed by the products of Belgium and of England in this line of manufacture, as well as of France.

Of glass, the Zollverein exports exceed the imports by an amount represented by 677,000 thalers yearly. These exports consist chiefly of plate and of concave glass, as well as of coloured, ground, and fancy-gilt glasses; but the highest degree of perfection must be conceded to the Zollverein glasses for chemical, pharmaceutical, horological, and physical uses.]

209 WILLMANN, C. W., *Berlin*—Manufacturer.

Cut plate-glass, representing the theatre and the two turrets of the churches adjacent, on the Gendarmes Square at Berlin.

210 COUNT SOLMS, Administrator of the Glass-works of Baruth and Friedrichsthal—Manufacturer.

An iron frame, containing samples of coloured flat glass.

Coloured circular slabs for watch-dials, scales for thermometers, &c.

Cylindrical lamp glasses.
A variety of tumblers; wine, champagne, and liquor glasses; milk-glass; lamp-screens.

Coloured bottles; glass pipes in imitation of wax tapers for gas mountings.

- 211 FINSCH, MORITZ, *Warmbrunn, Silesia*—
Manufacturer, Inventor and Patentee.
Punch-bowl, with cover, spoon, tray, and glasses. Vases of alabaster-glass. Decanter, with glasses and tray. Wine-cup, with white opaque lines; and with deep and raised cut decorations upon a dull ground. The decorations are polished in a peculiar manner in the fire.
- 212 METZGER, U., *Proprietress of the Glass-Works at Zechlin, near Rheinsberg.* (Agent, Luhme & Co., Berlin.)
Various glass articles for chemical or experimental purposes.
- 213 The ROYAL PRUSSIAN PORCELAIN MANUFACTORY, *Berlin.*
Large tureen, or hotch-potch dish, with lid.
Vase representing the twelve apostles, after statues by Peter Vischer.
Vase, with paintings after Miéris and Slingeland, in the Royal Saxon Museum at Dresden, with pedestal, gilt ground.
Vase, with paintings after Miéris and Terburg, in the Royal Saxon Gallery at Dresden, with pedestal, gilt ground.
Schinkel-vase, with handles of bronze, and a painting representing Harvest, after Von Klöber.
Vase, with serpent-like handles, representing dancing figures, after a sketch by Professor Von Klöber, and gilt.
Persian vase, representing a South American forest, after Bollermann.
Fruit-bowls, painted after nature, with flowers and figures.
Chandeliers of a green mass, with biscuit-figures upon a bronze socket, and pedestal of gypsum, with nineteen bronze candlesticks, and bronze lustres.
Tureen, dishes, plates, and dessert plates, decorated with reliefs.
Oval tureen, dish, plates, and dessert plates, decorated with field flowers.
Punch-bowl, with the painting of a drinking company, after Hogarth.
Bowl, imitation of Majolika, after the antique.
Painted dessert plates.
Flower vessel, after Watteau, with gilt pedestal.
Déjeûner of various pieces, and views upon the Rhine.
Octagonal déjeûner, of eight pieces, in lapis lazuli ground.
Square plates, with grapes, hunters, Venus, and with flowers, in a wooden frame.
Biscuit-figures—"the Thorn drawn out;" Ganymede.
Busts of the King and Queen of Prussia.
Figures—"Venus kneeling."
Lithophanies.
[When Frederick the Great occupied Dresden in the seven years' war, he saw the advantage of the porcelain manufacture, and transported a number of the best male and female manufacturers into Prussia, and hence originated the celebrated porcelain works of this country.—R. H.]
The accompanying Plates, 109 and 105, represent several of these objects.
- 214 ACTIEN VEREIN SHARE COMPANY, *Wilhelmshütte, near Sprottau*—Manufacturer.
An assortment of enamelled stone-ware.
- 215 ALTMANN, J. G., *Bunzlau*—Manufacturer.
Porcelain coffee and tea pots, butter plates, preserve pots, beer glass, and water can.
Specimens of earthenware.
Coffee-pot capable of containing 200 cups.
- 216 FRANKENBERG-LUDWIGSDORF, Count of, *Tillowitz, near Oppeln*—Manufacturer and Proprietor.
Earthenware console, silvered. Fruit baskets. Earthenware vases, silvered and gilt.
- 217 MATTSCHAS, J. G. H. (Widow), & SON, *Frankfort on the Oder*—Manufacturers.
An assortment of crockery and earthenware, comprising consoles, lamps, vases, plateaux, fruit shells, &c., the material of which is the clay of the vicinity of Frankfort.
- 218 PAETSCH & HINTZE, *Frankfort on the Oder*—Manufacturers.
An assortment of white earthenware goods, of various quality and form (the material used is from this country), consisting of butter plates (round and oval), butter tubs, salad bowls, dishes, preserve dishes, cabarets, plates (conical and common), butter and fruit plates, coffee and tea pots, cups, sugar boxes, tureens, sauce-boats, salt-cellars, portable dinner service, knife rests, candlesticks, basins, flowerpots, &c.
- 219 TIELSCH, CARL, & CO., *Allwasser, Silesia*—Manufacturers.
Extensive assortment of painted and white porcelain (china), containing cups and saucers, inkstands, plates, dishes, punchbowls, vases for flowers, painted vases, water-jugs, writing stand, sets of tea, coffee, toilet, and luncheon services, &c.
These articles are made of the purest porcelain clay, and are remarkable for their clear white and shining glaze. This china is known in all Germany, and is exported to Sweden, Denmark, Norway, and North and South America.
- 220 FORESTER, FRIEDRICH, *Grueneberg, Silesia*—Manufacturer.
Woolen cloth, Spanish stripes, for the China market.
Ladies' cloth, lilac.
Royal or three-quarters and black fine cloth, for the North American and China markets.
Fine satin cloth.
Various samples of woolen yarn.
- 222 BONGE, AUGUSTUS LOUIS, *Potsdam*—Manufacturer.
A number of statuettes, figures and consoles, in stone and wood, carved, bronzed, and gilt.
- 223 BAUER, REINHOLD, *Schwerin on the Warthe*—Inventor and Manufacturer.
Flower-table, with a bird-cage of oak wood, in the Gothic style.
- 224 BAUMANN, LOUISE, *Berlin*—Inventor.
Fire-screen, with plush embroidery.
- 225 ZEISIG, HEINRICH, *Breslau*—Manufacturer.
Bell-ropes of coloured silk, silk and gold, silk and silver.
- 226 GROPIUS, P., *Berlin*—Manufacturer. (Agents, Mr. W. F. Sachse, 36 Trinity Square, Borough, and Messrs. Kingsford & Lay, London.)
A variety of statuettes with suitable brackets, and other articles of papier-maché.
Tableau, representing a wall-side ornamented by figures, upon consoles, looking-glass frames with plate-glasses, medallions, and sundry other articles in carton-pierre.
Small table of carton-pierre, with marble plate.
- 227 MÜLLER, FERDINAND LUDWIG, *Berlin*—Manufacturer.
Specimens of gilt frames, which have lasted seven years, and which were (with the exception of four corner pieces) gilt by a process that secures durability.



VASE AND EPERGNE IN PORCELAIN. BERLIN.





211. SPECIMENS OF PORCELAIN, FROM THE ROYAL PRUSSIAN PORCELAIN MANUFACTORY, BERLIN.



228 STAB, G. C., sen., *Berlin*—Manufacturer.

Toilet-table of crown morocco leather and red velvet, surrounded by a pierced gallery. Exhibited on account of its superior workmanship.

A collection of fancy leather articles. Exhibited on account of cheapness and solidity of workmanship.

229 RICHT, GEORGE, *Berlin*—Manufacturer.

Plate cabinet, of rosewood (*bois de palisandre*), carved; an *étagère* cabinet, of the same material, carved.

These two pieces of furniture are exhibited on account of their workmanship and the beauty of the wood.

230 ELSHOLTZ, FRIEDR., *Berlin*—Manufacturer.

Slabs of inlaid flooring, each of two portions put together, each portion the size of four square feet.

231 ALBERTI BROTHERS, *Waldenburg, Silesia*—Proprietors.

Samples of *plattes royales*, as exported to Mexico and the West Indies.

232 BECKER, F. C., *Berlin*—Manufacturer.

Easy chair, with mechanism, and a reading desk attached.

233 BELOW, F., *Berlin*—Manufacturer.

Pattern-cards of papier maché gilt cornices, for picture-frames.

234 BENGEL, D., *Berlin*—Manufacturer.

Painted window-blinds, representing flowers, and landscapes, coloured, and in sepia.

235 CANTIAN, C., *Berlin*—Inventor.

A granite column, with pedestal: the base of Silesian marble, the capital of Carrara marble. A large table-plate of rosso antico corallino marble. Circular table-plate of red granite.

Grand vase, with column-like pedestal, supported by a bronze vase; diameter 2 feet 9 inches, height 3 feet 6 inches. The granite from the vicinity of Oderberg.

[The material employed by this exhibitor is well worthy of attention. The column or pedestal is of a garnet rock, singularly studded with crystals of that mineral, many of them very fine and almost transparent. The inclosing rock is a gneiss. The red marble and porphyry are also beautiful, and the latter of very considerable hardness. The material is well and carefully worked.—D. T. A.]

236 KUETTNER, C. A., *Wolgast*—Manufacturer.

Linen press, or sideboard with arched panels, and highly polished.

237 SCHIEVELBEIN, J. F. E., *Berlin*—Manufacturer.

Octagonal table, executed in wood mosaic, the material consisting of rare Indian woods. Samples of the wood, in an unfinished state. Easy chair capable of being taken asunder.

238 SOMMERFELD & HUEBNER, *Potsdam*—Manufacturer.

Two round temple mahogany tables.

239 WAMP, CHARLES, & SCHROEDER, *Berlin*—Manufacturers. (Agent, H. Kayser, 28 Basinghall Street).

Window blinds, representing pictures and landscapes.

240 MARCH, E., *Thiergartenfelde, near Charlottenburg*—Manufacturer.

A fountain, with pedestal, group of children, bowl, and triton.

This fountain is represented in the cut in the following page.

Large gothic vase and pedestal.

This vase is represented in the cut in the following page.

Two Italian vases.

Four figures of soldiers, at Berlin, with consoles.

Mosaic plates.

Chemical apparatus.

The fountain, the vases, the soldiers, and their consoles, are manufactured out of dust taken from the highways.

241 UNGERER, CONRAD, *Hirschberg*—Manufacturer.

Porcelain water-pipes, manufactured from a mixture of clay, &c., without metals.

242 ENGELER & SON, H. M., *Berlin*—Manufacturers.

An assortment of brushes of every kind and description. A plate with the royal Prussian arms, &c., formed of hair in the manner of brushwork. It contains about 80,000 holes. A large hair-brush. The manner of putting in the bristles is new.

243 KERSTEN, ALBERT, *Berlin*—Manufacturer.

Papier maché frames for daguerreotype pictures.

Sundry articles, as pocket-books, cigar-cases, &c., used as frames for daguerreotype pictures.

244 D'HEUREUSE, C., *Berlin*—Manufacturer.

Straw bonnets, of Brussels, Swiss, and Saxon straw.

Chip bonnet, of Italian chip.

Leghorn bonnet of 11 blades.

Table covers of 11 blades.

Italian straw, embroidered with straw and Manilla hemp, representing the Prussian and Bavarian arms.

245 DREUSIKE, W., *Neu Ruppin*—Manufacturer.

Writing-table of oak in the Gothic style, to enable gentlemen to write sitting or standing, with an iron fire-proof safe and a clock.

Ladies' casket, in rosewood. Work-table, in mahogany, with quilted foot-stool attached.

246 KOERNER, MORITZ, *Schönau in Lower Silesia*—Manufacturer.

Waste-paper basket, of artificial brilliants, the mass of which is a composition of tin, lead, and bismuth, and consists of many thousand separate parts which are soldered together and fastened upon wire rings. The two plates, with a view of Schönau, are of the same composition; the mould used was not of steel or stone, as in the case of the other pieces of the basket, but very strong glass.

247 MESS, LEOPOLD, & Co., *Brandenburg on the Havel*—Manufacturers.

Sample-card of gilt wooden cornices made by steam.

248 GEBHARDT, CHARLES AUGUSTUS, *Berlin*—Producer.

Portfolios, in morocco and velvet, stamped in relief and in gold, various sizes, with locks.

Albums, in morocco and velvet, stamped in gold, various.

An assortment of pocket-books, cigar-cases, portemonnaies, stamped in relief and in gold.

The arabesques and medallions adorning these articles are stamped upon the surface of the leather or velvet by a peculiar process.

249 MONIAC, EDWARD, *Berlin*—Manufacturer.

Samples of decorations made from embossed paper.

Separate standing flowers. "New-year's wishes."

Ball decorations. Sweet-cake covers.

Gold-paper pressed objects.

Sundry objects for the cotillon dance.

Sundry pasteboard articles.

Wreaths, &c., composed of artificial paper flowers.



March's Fountain in Terra-cotta.



March's Gothic Vase and Pedestal.

UNDEK, LOUIS, *Liegnitz*—Manufacturer, Inventor, and Proprietor. of best tallow house-soap. Lin-oil house-soap. Soap of ananas soap. Soap, invented by the exhibitor.

MOSENER, A., *Berlin*—Manufacturer. Cigar-boxes, pocket-books, ladies' boxes, letter boxes, &c.

SELACH, CHR. FR., *Naumburg on the Saale*—Manufacturer. (Agent, A. Heinzmann, 17 Ironmonger Lane, Cheapside.) Toys with tin-toys.

SELHANN, *Hirschberg, Silesia*—Manufacturer. Clock, without a seam. Stuffed goat.

HEHL, HENRY, *Quaritz, Province of Lower Silesia*—Manufacturer. Soaps of various scents, colours, and essences.

ARRÉ, H., JUN., *Berlin*—Manufacturer. Soap, with natural grain. Grain soap (Elaine soap). Soda soap. Tallow soap.

BAHN, A. E., *Berlin*—Manufacturer. Dolls of various kinds.

WIGDOR, M., *Berlin*—Manufacturer. Umbrella and parasol sticks in bone and wood on the lathe.

WITSOEKE, J. T., *Sorau*—Manufacturer. Ornament of mother-of-pearl, cocoa-nut, shell, and wax.

SCHKE, LOUIS, *Müllrose, near Frankfort on the Oder*—Manufacturer. Gun and shooting bags, of deer and calf-skin and catther. Hare and wildfowl waterproof bags. Bags.

KEBS, WILLIAM, *Berlin*—Manufacturer. Assortment of purses, cigar and fusee-boxes, cases for bills of exchange, spectacle-cases, ladies' lock-cases, letter portfolios, and purses.

SUMTRICH, L., *Schwiebus*—Manufacturer. Wax baskets, with painted and gilt decorations. Wax octagonal basket. Oval and pyramidal wax tapers.

FARD, A., & Co., *Berlin*—Manufacturers. Soap of stearine from tallow prepared by lime, sulphuric acid and hot pressing. Candles manufactured the same. Soap from tallow prepared by sulphuric acid and pressure, without pressure. Two samples of stearine, warm prepared by sulphuric acid, warm and cold. Candles manufactured from the same. Soap from palm-oil, prepared by sulphuric acid and pressure. Candles manufactured from the same, with exterior coat of stearine. Soap from palm-oil, prepared with sulphuric acid and pressure, warm pressure. Candles manufactured the same.

PALLIS, A., *Berlin*—Manufacturer. Palm-oil-soap and palm-soap. Tallow for candles and soap. The tallow used in these articles is of Prussian origin; the palm-oil imported from Liverpool.

264 SCHMERBAUCH, H., *Berlin*—Manufacturer. A variety of cigar-cases, portfolios, embroidered, card-holders, purses, pocket for keys, of straw and leather and silk in combination.

265 SORHLKE, G., *Berlin*—Manufacturer. Toys, "an English regiment on parade in presence of Her Majesty Queen Victoria and of her royal suite," formed of painted pewter figures. Patterns of pewter articles, candlesticks, &c., white and gilded by galvanism.

266 FECHNER, F., *Guben*—Manufacturer. Gilt and ornamental borders. Artificial flowers and leaves. Gilt silvered, and coloured paper. Articles used by bookbinders, leatherworkers, confectioners, and perfume-makers. Articles composed of artificial leaves, flowers, &c.

267 GEISS, M., *Berlin*—Manufacturer. Statues cast in zinc:—"Hebe," after Canova; "Eve," after Bailey; "Boy with a swan," after Kalide. This figure is represented in the cut on the following page. "Two stags," after Rauch; "Kneeling Niobe," after the antique, cast in zinc. Capitals and columns; tiles—cast in zinc. [The costliness of bronze renders its employment as a material applicable to the purposes of monumental statuary almost exclusively. On this account the extension of sculpture, with the increase in the number of private collections, has been seriously impeded. This impediment, however, is now being rapidly removed by the advances that have been made in the art of zinc-casting. The working on this metal as a medium for high art had at first to make good its progress against many prejudices, chiefly on the part of artists themselves. In this lay the cause which long retarded its employment in connexion with sculpture, whereas, in domestic architecture, its application during the last eighteen years has superseded that of almost every other material. Every doubt has now been dispelled as to the comparative durability of zinc in the open air, and under the influence of every variety of weather. Chemistry has demonstrated this property of the metal. Zinc is readily melted, liquifies very completely, and, therefore, is better adapted to cover the smallest lines in the mould than metals of a harder and more compact texture. The zinc casting is so pure and so finished on being turned out of the mould that the work requires but very little subsequent chasing. This circumstance, combined with the cheapness of the metal itself (the cost of a zinc cast being to a cast in bronze only one-sixth or one-eighth), renders zinc an admirable material for statuary. But the unfavourable colour of the zinc proved, for a long time, a great obstacle in the way of its application to these purposes. This difficulty, however, through the indefatigable exertions of the present exhibitor, the founder of this important branch of art in Berlin, has been completely overcome. He has succeeded in imparting to the zinc a metallic surface, which gives to the cast the perfect aspect of Florentine bronze. The colossal group of "The Amazon," after Kiss of Berlin, cast in zinc and bronzed by M. Geiss, presents a striking specimen of the perfection to which the latter has brought his peculiar invention. The model of this group, cast in zinc by Geiss of Berlin, and now deposited in the Great Exhibition, will



Boy and Swan, after Kalide.

establish the superiority of zinc over any other metal for similar purposes, so far as the elements of cheapness and solidity combined are concerned.]

268 BERGMANN, LOUIS, *Warmbrunn, Province of Silesia*—Inventor.

A landscape and several figures of animals, in a very diminutive size, cut out of bone.

269 DAEHNS, ADOLPH, *Berlin*—Inventor.

Wreath of flowers, carved out of a solid piece of oak, with a foot of the same material, applicable as a frame for a painting or looking glass.

270 ALBERTY, J., *Berlin*—Inventor.

Frame, carved in wood and gilt, after a drawing by Stüler, made for the painting of *Lo Spasimo*, in the Chapel Royal at Berlin; the property of H. M. the King of Prussia.

Madonna, carved out of lime tree; the property of H. M. the King of Prussia.

Relievo, carved in pear-tree wood, representing Silenus inebriated, after the antique; suitable for a door to a cellar.

271 ROYAL PRUSSIAN IRON FOUNDRY OFFICE, *Berlin*.

Group of figures in cast-iron, representing two Amazons, one of whom is on horseback, in a silver-mounted and decorated case.

Group of figures, representing two warriors, one of whom is on horseback, with a similar case.

The Warwick vase, 2 feet 6 inches in diameter, with gilt inside.

The Athenian vase, with figures and handles, and gilt inside; 2 feet in diameter, and 3 feet high.

This vase is represented in the cut in the next page.

The Alexander vase, 3 feet 4 inches in diameter, and 2 feet 8 inches high; the border is decorated with reliefs after Thorwaldsen, representing Alexander's entry into Babylon. Mounted with silver, and gilt inside.

[The fine iron castings executed at Berlin, and at some of the other Royal Foundries in Prussia, have long been known as equally delicate and perfect. They are sometimes of such small dimensions and of such complicated forms that a very unusual degree of fluidity of the metal must have been necessary, and it is generally imagined that a small admixture with other substances, as phosphorus, has assisted in producing this result. The process must even now be regarded as somewhat secret, although no doubt the nature and purity of the iron, and the absence of impure sulphury coal in smelting, have great effect in thus ensuring a free, fluid, and not too brittle metal. The minuteness of detail in such works is not the least remarkable part of the subject.—D. T. A.]

272 EICHLER, G., *Berlin*—Inventor. (Agents in London, Williams & Norgate, Booksellers, 14 Henrietta Street, Covent Garden.)

Bas-reliefs in plaster of Paris, after Thorwaldsen—Bacchus and Amor; Christ blessing the children; Mary with the Child and John.

Several plaster of Paris casts of antique and modern gems.

Tableaux with 52 portraits and medallions, cast in plaster of Paris, after sculptures of German artists of the 16th century.

Tableaux with medallions of various sizes, framed; all casts in plaster of Paris.





Athenian Vase.

BRAKE, PROFESSOR F., *Berlin*—Inventor.
Relievo in plaster of Paris.

Part of a part of the pedestal of the marble monument of Frederic William III. of Prussia, erected at Berlin. The monument is double the size of the model, and contains the following emblems of garden pleasures—a mother reclining to the rippling of the brook; girls with flowers; a swan; children at a bird's nest, &c. Executed in marble, original.

ENGEL, F., *Berlin*—Inventor.
Model of an ellipsoid, with its curves and centre cut out, after Fresnel's undulating plane.

HEING, FR. L., *Berlin*—Inventor. (Agent in London, B. Hebel, Esq. Prussian Consul-General.)
Relievo and table ornament, after Tieck, in two colours, galvanically silvered and gilt.
Hand basin and water-cup in similar styles, galvanically silvered over.
Small vine leaves in two colours.
Vases, and a scone in a similar style.

276 LIEDEL, C. J., *Warmbrunn*—Inventor.

Artificial compositions of moss and paper, representing Warmbrunn in Silesia, Kösen near Naumberg, the lead chambers at Venice, the Rochelfall, a mill on the hills. Chiefly made by the exhibitor.

277 KRUSE, C. B., *Stettin*—Inventor.

Cork models, executed by the exhibitor:—
A ruin. The church at Kobern on the Moselle. The Nun-hill and the fortress at Salzburg. The gate at Basle. View of the chateau de Meillan en Berri. View of the chateau de Josselin en Bretagne. Castle of Rheinstein on the Rhine. Castle Langenau on the Lahn. Ruin of the church de Seps Douleurs at Jerusalem. Ruin of the gate at Damascus. Castle of Babertsberg near Potsdam. Castle of Rhineck. Two French ruins.

278 KRAUSE, MARTIN, *Berlin*—Inventor.

Casts of the Twelve Apostles, which were carved in onyx, and fixed in the shield, presented by the King of Prussia to the Prince of Wales.

Bracelet of various pastes, with casts after gems in the Royal Prussian Collection, enchased in gold.

279 KISS, Professor A., *Berlin*.

Group, in zinc and bronze, representing an Amazon on horseback attacked by a tiger—after one cast in bronze in 1839, by a number of amateurs, and presented to the King of Prussia, and which was placed by his Majesty's commands in front of the Royal Museum, Berlin—designed by the exhibitor, cast in zinc and bronzed over by M. Geiss, Berlin, in his peculiar manner.

Group in bronze, as above, on a small scale.
This group is represented in the Plate 75.

280 DEVARANNE, S. P., & SON, *Berlin*—Inventors.

Zinc casts:—

Lion. Panther.

Venus. Boy with a squirrel.

Stag's head, lion's head, and Paris's head.

Console. Pin. Knob.

Rosettes. Wreath of laurels. Square ornament.

Trellises, with beads.

Various pieces of ornaments.

Assortment of fine cast-steel. Jewellery.

281 FISCHER, KARL, *Berlin*—Inventor.

Portrait of Her Majesty the Empress of Russia, cameo in onyx.

Various medals in bronze, in frames.

Phrixus and Helle; relievo in ivory—original composition.

282 WINKELMANN, JULIUS, *Berlin*—Inventor.

Statue of Frederic II., Elector of Brandenburg, produced by electrotype process.

Silvered and gilt tea-trays; snuffer-trays; vine-bearer; large antique bowl; reliefs; plates; caster-stand; chandeliers; large wine-cup; glass trays; cups; decanter-stands; fruit-bowls; candlesticks; candelabras; chandeliers; napkin-rings; bread-baskets; spoon-basket, &c., all produced by the same process.

283 FRANZ, JULIUS, *Berlin*—Inventor.

Bronze figure of a shepherd attacked by a leopard, in plaster of Paris.

284 HAENEL, EDWARD, *Berlin*.

(London Agent, Mr. M. Kronheim, 32 Paternoster Row.)
Frames and boxes, containing 500 different impressions of certificates, bank-notes, and labels of every description, upon pasteboard, in black, colours, and gold.

Specimens of type.

Casts of brass types for bookbinders and gilders, and electro-typed matrices for casting large type—also copies of wood-cuts, &c.

285 KALIDE, T., *Berlin*—Inventor.

Group: the Bacchante with the Panther, in plaster of Paris from the original in marble.

A boy with a swan, in bronze, for a fountain in the royal castle at Charlottenburg, the property of H.M. the King of Prussia.

286 PFEUFFER, C., *Berlin*—Inventor.

Various medals, in white and bronze metal: Antigone and Sophocles; the Arsenal at Berlin; Frederic William IV., King of Prussia; the Bishop of Munster; Vulcan and Minerva, &c.

287 MÜLLER, —, *Berlin*—Inventor.

Ornamental castings in bronze:
The Prince of Prussia on horseback.
Prince Albert of Prussia on horseback.
A broken spider-web.
These articles are unique, as the models did not admit of multiplication. The first two were finished in one casting, the others required two castings.

288 SONDERMANN, —, Artist of the Royal Academy, *Berlin*—Inventor.

Stag's head, of plaster of Paris, saturated with wax and varnish, with natural horns and a garland of oak leaves, in papier maché.

Buck's head, of papier maché.

289 FRIEBEL, LOUIS, *Berlin*—Sculptor.

Newfoundland dog in bronze, after the model of Moëller. The whole of the figure, inclusive of the base, was cast in one piece, and the mass has not been retouched by the chisel, the seams only having been removed.

Bronze figure, with pedestal representing Hope; after the model of Rauch, cast and chiselled by the artist.

290 HEYMANN, CHARLES, *Berlin*—Proprietor.

Architectural work, with 48 plates. Architectural details, with 120 plates. Collections for frontispieces, and grand plans for town houses, with 15 plates. Topographic map of the country round Berlin and Potsdam. Exhibited as specimens of the state of lithography in Berlin.

291 SEELING, G. W., *Berlin*—Inventor.

Front of the Royal Arsenal, Berlin, celebrated as one of the finest buildings of Germany. It was employed in 1844 as the emporium of the great German Exhibition. The principal material is paper; the moulds for the bas-reliefs and cornices cut in steel and brass by the medal engraver Fischer.

292 MOELLER, C., *Berlin*—Inventor.

Bronze groups: Boy with a Newfoundland dog; Girl with a bull-dog.

293 FRANZ, JULIUS, *Berlin*—Inventor.

Bronze figure, representing Victory standing upon a rock, throwing a wreath to the conqueror, after the original of Rauch, reduced to 22 inches in height.

Bronze figure: Victory, writing down in the book of history the names of those victors whom she has crowned.

294 FADDERJAHN, BERNHARD, *Berlin*—Inventor.

Plaster of Paris casts from moulds used in the manufacture of ornamental paper and of embossed silver. Bronze cast of a Gothic bas-relief, in commemoration of the union of the German Princes for the completion of the cathedral at Cologne, after a drawing by Professor Hoffstadt of Munich.

295 BIANCONI, F., *Berlin*—Inventor.

Marble bust; Shepherd, after Thorwaldsen; statues in marble—Paris, after Canova; Venus, after Thorwaldsen.

296 FISCHER, C. H., *Berlin*—Inventor.

Figures in bronze: Eagle; Girl praying; a Danaide.

[Sculpture in the Zollverein, as well as in the Northern States of Germany, is represented principally by the schools of Berlin and of Munich. The latter, founded by Schwanthaler, had already produced a great many works, under the co-operation of Stieglmeyer, long since. The former, always adopting the pure Greek style, has not rivalled the latter in the number of its creations, but all that it has produced is of high design and execution.

In Berlin, sculpture is indebted for the high character of classic perfection which it has acquired to the co-operation of three men, well known in the history of art. They are Rauch, Tieck, and Schinkel. These have been the founders of the School of Berlin. Their constant struggle to reach the pure Greek ideal image excluded from their creations every foreign element. Schinkel invariably followed in the same track in all his works in connection with sculpture. The young artists formed in this school strictly adhered to the principles inculcated by its first teachers, and, in common with their great living masters, one of whom is Rauch, observe with zealous earnestness and success the course that has been indicated to them, by a clear understanding and a vivid perception of the real beauty and noble sentiment of art.]

297 DIETRICH, FRIEDRICH, *Berlin*—Inventor.

Two heads of children at play, in Carrara marble, designed and executed by the exhibitor.

298 FRUEH, GUSTAV, *Berlin*—Inventor.

"The Butterfly-catcher," cast in bronze.

299 KESSELER, CARL, *Greifswald*.

Bronze full-length statue of the muse Polyhymnia, after the antique statue in the Royal Museum, Berlin.

300 KONARZEWSKI, ALBERT, *Berlin*—Proprietor.

A bronze group representing a child with a group of storks, modelled by Albert Wolff, sculptor and member of the senate of the Academy of Fine Arts at Berlin, and chased by the exhibitor.

301 MANSIS, H., *Berlin*—Inventor.

Collection of models for gilders, in a composition of sulphur.

302 RUNGE, DR., F. F., *Oranienburg*—Inventor.

Portfolio, with sheets of paintings, and a volume with the same.

The paintings produced by chemical action; the process is applicable to the purposes of painters, designers, and calico printers. A new invention.

303 SCHROPP, SIMON, & Co., *Berlin*—Publishers.

Three portfolios, containing copperplate printed maps. Lithographic printed and coloured maps. Geological maps. Map of the moon. Engraved, or drawn on stone, by the most eminent artists of Berlin.

304 STETTER, CARL GUSTAV, *Breslau*—Proprietor.

Model of an ancient Greek theatre without the pillars and the rock, in strong cardboard, made by Gläzer at Breslau.

305 SUSSMANN, LOUIS, *Berlin*—Inventor.

Model of the obelisk of Luxor, at present on the Place de la Concorde, at Paris; precipitated by electrotype process in copper, and gilt. The electrotypic art has here

been employed to exhibit the plaster of Paris model with accuracy: this is difficult to attain in the ordinary process of casting, from the shrinking of both the mould and the metal.

[The plaster of Paris mould is either carefully covered with plumbago, bronze powder, or it is gilded prior to being electrotyped.—R. H.]

306 WINKELMANN & SONS, Berlin—Inventors.

Portfolio-book, containing specimens of a great number of architectural, landscape, and other lithographic prints; coloured and executed by the exhibitors. Exhibited as specimens of the state of lithographic art in Berlin.

307 WOLFF, ALBERT, Berlin—Designer.

Marble statue—Girl with a Lamb, representing Innocence.

308 ZEBGER, F. W., Berlin—Painter.

Ten panes of painted glass. Glass paintings representing the Empress Edith, St. Christopher, and St. John.

309 BERNHARD, AFINGER J., Berlin—Inventor and Manufacturer.

Bronze portraits:—Prince of Prussia, Princess of Weimar, General Von Wrangel, and Professor Rauch.

Bronze statuette:—Virgin and Infant, in mediæval style.

Both invented and executed in bronze by the exhibitor, and chiselled by Mr. Mertens, the artist of the "Shield of Faith" (presented by the King of Prussia to the Prince of Wales).

310 BLAESER, GUSTAVUS, Berlin—Inventor and Modeller.

Statue of Louis van Beethoven upon a pedestal, in bronze; with corner figures, representing the Spirits of Chivalry, Religion, Sadness, and Joy.

Statue of Her Majesty the Empress of Russia riding on horseback, in bronze. The chasings by Albert Konarzewski, academical artist.

310A SIEMENS & HALSKE, Berlin—Proprietors and Patentees.

Electric telegraphs. These telegraphs are used on all Prussian Government lines, and on most of the railway lines of Northern Germany, making a total of about 3,000 miles; besides extensive lines which at present are in course of construction in Russia and other countries.

1. Indicating telegraphs.—Keys are arranged round a dial, each key bearing a letter of the alphabet. One line-wire is used which connects two or more instruments at different stations. A hand on each dial revolves in concert with the hands on the remaining instruments; but by pressing down a key on any of them, all the hands stop, pointing to the same letter, until the key is again released. These instruments differ essentially from other telegraphs, inasmuch as they are entirely electrical machines, which break and reclose their own contacts in a similar manner as a steam-engine works its slide.

The electric current is passing through the line wire, and the coils in each instrument cause the armatures to be attracted by its motion to break the circuit. The armatures are then quite at liberty to fall back, and in so doing, each instrument re-establishes the circuit, and the succeeding stroke takes place. In pressing down a key, the armature is stopped from falling back, and consequently no current can pass through the line-wire until it is released. The motion of the armature is transferred to a notched wheel, the spindle of which carries the hand on the dial. In the same case with each telegraph, is an alarum, which is also worked by the electric circuit, only

at the time when the commutator arm is placed in the position of "rest," and that of another station is moved on "telegraph." The alarum continues to sound until the arm of the telegraph, which is to receive a message, is also placed on telegraph, when the instruments begin to work, making about 35 revolutions, or 1,050 double strokes of the armature per minute.

Printing telegraphs are also worked by the electric current only, without the aid of clockwork. Their arrangement is similar to that of the indicating telegraph. In place of the hand on the dial there is a type-wheel with 30 springs, each carrying a type; it stops with the hand of the indicating telegraph, at which moment a hammer placed below the wheel, strikes against it, and prints the letter on a strip of paper, which passes over a blackened roller, turning round with it so as always to offer new surfaces to the hammer. The hammer is worked by a magnet, which is excited by the same battery which works the type-wheel: its current is continually broken and restored by the movements of the armature of the type-wheel; but as the type-wheel stops, the current becomes permanent, and accumulates sufficient power to raise the hammer, which, in so doing, breaks its own current and falls back again.

The printing telegraph is placed always by the side of the indicating telegraph, and records each message on both or all stations.

By this means mistakes in the transmission of the messages are made morally impossible. The current being always broken on both or all the stations, currents arising from bad insulation of the line-wire will not influence the harmonious working of the instruments, as long as these currents are not strong enough to work one or the other instruments by their own action, and the receiver of the message will always be able to interrupt and speak to the communicator. Besides an unlimited number of telegraphs and other instruments, for communicating particular signals, may be included in the circuit of the same line-wire.

2. Another telegraph, peculiarly adapted to record on both stations the messages delivered by the common English needle telegraph. Two magnets, by means of two pins, make dots in two different lines on a strip of paper, which is moved by clockwork. Dots on the upper line correspond with a movement of the needle to the right, and dots on the lower line correspond with movements to the left.

Instead of needle telegraphs, peculiar communicating instruments may be used, consisting either of a pair of keys only, or of a complete keyboard, which, by pressing down one of them, causes the conventional sign representing the letter marked on it, to be printed in a double line of dots.

3. A double needle telegraph, with electro-magnets, and worked by one line-wire.

4. An alarum, by which intermediate stations, when excluded from the line-wire, may be recalled into the circuit.

5. An alarum, with two large cast-iron bells, which are placed on level crossings, &c., along railways, and serve to announce the departure of each train along the line. The bells are surrounded by clockwork, which is released by a current of longer duration than is required to work the telegraphs.

6. An instrument, which is used to detect places of bad insulation in the gutta percha coated line-wire.

7. A galvanometer, to test the insulation of the line-wire, and another by which defects in the line-wire may be pointed out, without leaving the end stations.

8. Gutta percha coated electric line-wire, which was first invented by Mr. Siemens, and applied by him on a large scale, since 1847.

9. An improved Morse's telegraph, worked by secondary power.

b. GRAND DUCHY OF BADEN, SOUTHERN PARTS OF THE WEST PROVINCES OF PRUSSIA
AND ELECTORAL HESSE.

311 BIEGEL, JOHN, *Bliesen, near St. Wendel.*
Manganese in pieces and in powder.

312 BISCHOF & RHODIUS, *Linz, on the Rhine.*
White lead and white zinc; Kremserweiss; pierced pieces of the same to show the structure. Hard ceruse; pierced pieces of the same. Soft ceruse. White zinc; pierced piece of the same.

[White zinc has been lately introduced both on the Continent and in this country as a substitute for white lead. The advantages appear to consist in its smaller liability to discolour under the influence of an impure atmosphere, and in the fact that workmen suffer less in the manufacture of white zinc (oxide of zinc) than they do in that of white lead (carbonate of oxide of lead). The white of Krems, called Kremserweiss, is a pure carbonate of lead of remarkably bright colour.—R. H.]

313 BLEIBTREU, LEOPOLD, *Bonn.*
Two cylindrical blocks of alum, common and refined. The Rhenish alum is usually conveyed in crystallized cylindrical blocks without any external case to protect them.

[The tertiary beds on the banks of the Rhine, near Bonn, contain large masses of lignite, in which is potash and a certain proportion of iron pyrites. These beds are interstratified with clays consisting of nearly pure alumina. The sulphuric acid, alumina, and potash required for the manufacture of alum, are obtained by burning together the pyritous wood and the aluminous earth. A double decomposition takes place during the combustion, the iron being left in the shape of peroxide colouring the ash, while the double sulphate of alumina and potash is produced. The burnt ashes being soaked in water, the alum is dissolved out and afterwards purified; it is at length crystallized and is then fit for sale.—D. T. A.]

314 BRASSEUR & Co., *Nippes, near Cologne—*
Inventors and Manufacturers.
A case containing leaden plates, with the oxide, and specimens of white lead.

[The exhibitors state, that, by adopting precautionary measures peculiar to themselves, they have succeeded in preventing the occurrence of any cases of disease from the poisonous metallic compounds which the workmen have to handle. In five years, it is said that not a single case of disease from this cause was known among the workmen. The exhibitors do not describe the means employed for this purpose; probably they resemble in their main features those in use in this country, which, when thoroughly carried out, are generally successful in the prevention of the poisonous effects of lead.—R. E.]

315 BREDT & Co., *Stolberg—Manufacturers.*
Ores of zinc and lead. Willemite from the mine "Busbacher-Berg." The crystals have a density of 4.13, and a hardness between 4 and 5. Their composition is $Zn^{\circ} \ddot{S}i$. Calamine from the mines "Busbacher-Berg" and "Zufriedenheit." Zinc melted in the zinc-works "Steinfurth," from a mixture of the three aforesaid ores.

[The willemite of Leonhard is the willemine of Levy and Bendant; and in addition to the locality named, is found in the calamine deposits of the Vieille Montagne, near Aix-la-Chapelle. It is an anhydrous silicate of zinc, being composed of silica, oxide of zinc, and a small quantity of oxide of iron. Calamine varies exceedingly in its composition. That of La Vieille Montagne containing 89 per cent. of carbonate of zinc; that of Stolberg but 60 per cent.; and the electric calamine of Busgan being a silicate containing 66 of oxide of zinc and 27 of silica. The process of obtaining zinc from the ore is to melt it in a reduction furnace, containing long earthenware tubes through which the metal passes, and is collected in close vessels to protect the zinc from oxidation.—R. H.]

Chlorophosphate of lead, from the mine Busbacher-Berg, where that ore is very abundant. Lead from chlorophosphate of lead, without mixture of other ore. The composition of this metal is—lead 98.84; copper 0.52; iron 0.20; silver 0.07; phosphorus 0.20. White lead: carbonate of lead from the mine Zufriedenheit. Sulphuret of lead from the mine Zufriedenheit.

316 MEINERZHAGEN, AND KREUSER BROTHERS—
Mechnich and Commern.

Various specimens of lead-ore, found in the mines of the Count Lippe, and of the Messrs. Kreuser Brothers, on the "Lead mount" in the Eifel country, at three different layers.

Knolls—that is, the ore separated from the smaller parts, as they are raised from the shafts.

Ore produced from knolls, viz., fine crown ore; fine dry-ground ore; schlech, prepared upon washing tablets or buddles; principal schlech, produced upon the shaling tables of Carinthia.

Metallic-lead, produced from ore of this country. Chest of small shot, from the same.

317 PORZELT & HARPERATH, *Cologne—Manufacturers.*
An ornamented white Carrara marble chimney-piece, in renaissance style. Slab of coloured marble.
Marble blocks in their natural state.

318 SOCIETE des MINES et FONDERIES d'ESCHWEILER,
Stolberg.

Samples of lead and zinc ore.

Block of silver, weight about 11 lbs.

Plate of spelter; and pig of refined lead.

[The silver which is combined with the lead in the ore is separated by exposing the metal in furnaces, so arranged that a strong current of atmospheric air is continually passing over its surface. By this process the lead is oxidized, and litharge or red lead produced, the silver being left behind in a state of purity.—R. H.]

319 VON MUELMANN, ALBERT, *Plato Zeche—*
Proprietor.

Specimens of peat or brown coal. Fire clay and fire brick. Crucible.

[The original products were found and worked on the lands of the exhibitor. The peat is used entirely in the manufacture of earthenware. The crucibles contain, in

addition to the original elements, black lead from Bavaria. Retorts and other earthenware articles, as well as fire bricks for blast and puddling furnaces, are manufactured from the products. The bricks are exhibited for cheapness and quality.]

320 WALDTHAUSEN, O. W., *Clarenburg, near Cologne*—Manufacturer.

White lead; exhibited for beauty and cheapness of manufacture.

[White lead is so very extensively used as a pigment, both alone and as a basis for various colours, that any improved or less costly mode of manufacture than that at present used would be of great value. Various processes are adopted in its manufacture.—D. J. A.]

321 LANDAU, SALOMON, *Coblentz and Andernach*.

Lava millstones. These stones come out of the lava quarries of Nieder Mendig, near Andernach on the Rhine, and considered to be of superior qualities. They are chiefly used for grinding all sorts of corn, bark, colours, mustard, drugs, &c. They can be procured as large as 6 feet in diameter and 18 inches thick. The quarries, which are about 150 feet deep, employ some hundreds of men.

[The millstones of Nieder Mendig are obtained from lava that has been poured out from the long-extinct volcanoes of the Lower Rhine. This lava is now almost basaltic, and is extremely hard and coarse. It separates easily into columnar shapes, and makes excellent millstones, which are exported to most parts of the world. They were well known to the Romans.—D. T. A.]

322 HAGEN, FRANCIS, *Cologne*.

Ores of zinc (calamine) from "Margaretha Josepha" mine at Berg Gladbach, near Mülheim on the Rhine. Spelter from the same. These are fair average specimens of the produce of the mine, for the purpose of giving an idea of the general development of the veins.

323 KÖNIG, GERHARD, *Treves*.

Sandstone for buildings and sculpture. Specimen from Udelfangen, very strong, and employed in the building of the church of St. Laurence in Treves.

Sandstone from Aix, and of the same sort as that used by the Romans in the construction of the celebrated Porta Nigra, at Treves.

Sandstone from Lorich, Menningen, Wasserlisch, and Tawern.

324 STEEL-WORKS—*Lohe, near Siegen*.

Specular steel-iron, produced from carbonated iron ore.

Pig-iron, produced from carbonated iron ore and hydrated oxide. Iron ore, to be used in the production of natural steel. Natural steel, first quality (noble steel). Natural steel, second quality (middle steel). Materials for the production of these articles. Carbonated iron ore, from the mine Stahlberg, near Müsen, district of Siegen. Hydrated oxide iron ore, from a mine in the neighbourhood of Müsen. Slag from the blast furnace. Pumice-slag by watering the former. Slag from the conversion of the steel-iron into natural steel.

[The iron ore at and near Siegen, and in various other places on the Rhine, both in Prussia and the Duchy of Nassau, consists, for the most part, of the kind called "spathic iron," which is a crystalline carbonate mixed with more or less carbonate of lime, and often not a little resembling calc-spar. This ore is so free from sulphur and phosphorus, that the first result of smelting it by means of charcoal fuel is to produce a kind of pig-iron very nearly resembling steel, and capable of being used for many of the purposes of steel. Together with the car-

bonate a considerable quantity of oxide of iron also exists in the neighbourhood; and there would seem no reason why very large manufactories of iron might not succeed near the banks of the Rhine, where the coal from more than one locality may be had by water at moderate prices, and where the high protective duties of the Customs Union continue to exclude all cheap iron of whatever kind. There are numerous mines and several furnaces for iron near the localities here referred to. The sparry carbonate of iron is called by the Germans "stahlstein," or steelstone, from the result already mentioned.—D. T. A.]

325 WEBER, CHARLES, *Mannheim*—Manufacturer.

Rough pebble, taken from the bed of the Rhine; and another, of the same description, also taken from the bed of the Rhine, and cut as a diamond. The pebble was originally of an immense size. It is exhibited on account of its workmanship, and its purity and regularity of cut, which caused the exhibitor a full twelvemonth's incessant labour.

326 ROYAL MINES AT LOHE, *near Siegen*.

Sparry and brown iron-stone from the blast furnace. Hydrated oxide iron ore.

[The carbonate of iron of the neighbourhood of Bonn contains usually about 64 per cent. of protoxide of iron, with carbonic acid, some oxide of manganese, magnesia and lime. The composition of the hydrated oxide is, in 100 parts—iron, 59.15; oxygen, 26.15; water, 14.70. The chemical composition of the ores from different localities varies slightly.

Several varieties of the so-called "German steel" are known in commerce. Various kinds of furnaces are employed in its manufacture, according to the character of the ore to be smelted, the steel being made direct from the ore. In the German process of making steel, the loss of iron amounts to from 20 to 30 per cent., and very nearly 600 bushels of charcoal are consumed per ton. Previously to smelting the ores, their finer varieties are selected, pounded, and washed to remove impurities; it is then mixed with charcoal, and placed in the furnace, which is excited by the cold-blast. The Indian wootz is of a similar character to the "German steel."

The Royal Foundry at Berlin has been long celebrated for the production of iron. In this process about 48 lbs. of coke are used for producing 100 lbs. of iron.—R. H.]

327 MARQUARDT, DR. L. C., *Bonn*.

Chloroform; sulphuric ether, concentrated acetic acid, cyanide of potassium, and other chemicals.

328 PAULY, OTTO, *Chemical Factory, Rüppurr, near Carlsruhe*—Manufacturer.

Specimens of prussiate of potash, sal-ammonia, muriate of ammonia, and phosphorus.

329 KOCH, CHARLES AUGUST, *Gladbach, near Mülheim, on the Rhine*—Manufacturer.

Ream superfine blue and cream thick and thin post paper.

Medium, royal, super-royal, and imperial paper for mercantile books. Plate-paper for copper-plate printing and lithography. Carton papers for different purposes.

330 EIPENSCHLEID, L. *Neuzeit*—Manufacturer.

Potato flour.

331 WELCKER, A. C., *Wallersheim, near Coblentz*—Manufacturer.

Farina, or improved potato flour; the same, ground. Extensively used for stiffening muslins, &c.

- 332 WAHL, FREDRICH, *Neuwied*.
Sago and potato-flour. Manufactured without the use of any chemical substance. Exhibited on account of its purity, whiteness, &c.
- 333 WERTH, AUGUST, & Co., *Bonn*.
Specimens of wheat starch and potato meal, and chemical productions extracted from the same.
- 334 WIESMAN, A., & Co., *Augustenhütte, near Bonn*.
Mineral oil; bituminous paper coal; fossil black; paraffine, and fire-lac.
- 335 FLOCKENHAUS & Co., *Cologne*.
"Naphtha tincture" and prepared indigo.
Coloured flock wool; printed half wool and silk; and merino wool.
The "nap tincture" is used in the treatment of the linen and cotton threads in all dark-coloured cloths.
- 336 LOOSEN, JOHN GEORGE, *Cologne*.
Specimens of Cologne glue, packed in lint.
- 337 ROEMER, CHARLES, *Brühl*—Manufacturer.
Specimens of refined bone oil, refined machine oil, and refined Provence oils. These oils are clear, and remain fluid till the thermometer sinks below zero.
[The oils here described are obtained from bones and other animal substances. They are said to retain their fluidity at an extremely low temperature, and are employed for lubricating machines, &c. Most of the ordinary oils become partially concreted at moderately low temperatures. This is due to the separation of crystalline particles of stearine from the oleine, or liquid portion. The latter forms the oils in question, the separation being effected by the combined means of cold and pressure.—R. E.]
- 338 GRUND, *Carlsruhe*.
Two pictures painted by new processes.
- 339 HOMBERG & SCHEIBLER, *Eupen*.
Specimens of buckskin and ladies' cloth.
- 340 MENGELBIER, J., *Aix-la-Chapelle*—Manufacturer.
(Agent, J. Nuellens, 43 Albion Street, Hyde Park Terrace.)
Carriage, called calash, with Collinge's patent springs of English steel; the body of mahogany panels, the inside lined with Lyons silk.
- 341 MIES, JOSEPHUS, *Cologne*—Manufacturer.
Various trusses and bandages, exhibited for their simplicity and cheapness.
- 342 RICHARD, L., *Berlin and Locle, Neufchâtel*—Inventor and Manufacturer.
A ship's chronometer, and an explanatory plan, being a novel invention.
- 343 DORER, MICHAEL, *Furtwangen in the Black Forest, Baden*—Manufacturer.
An anchor-watch, entirely made of ivory, including the wheels, anchor, balances, bridges, shoulders, spring-box, case, inside cover, and the face; the screws are gold, and the moving power is steel. It works in ten rubies, and has seconds. Its weight is, glass and vase included, only half an ounce.
Another, similar, only having no seconds; runs in eight rubies and steel screws. Its weight is five-eighths of an ounce.
- 344 BAUNSCHIEDT, CHARLES, *Endenich, near Bonn*—Inventor.
"Life-animators, new instruments for the medical art."
[The exhibitor claims for his instruments the power of expelling "matters and humours from the body, and infusing animating substances through the skin," from which effects it is considered that great benefits are to be expected. The precise value of the remedies proposed is not described.—R. E.]
Artificial leech.
- 345 ROLFFS & Co., *Cologne and Siegburg*—Manufacturers.
Printed calicoes and handkerchiefs, printed by machinery invented by the exhibitors.
- 346 WAGNER & SON, *Aix-la-Chapelle*—Manufacturers.
Twelve pieces of woollen cloth.
- 347 CHRISTOPPEL, LOUIS, *Montjoie near Cologne*—Manufacturer.
Specimens of woollen buckskins for winter and summer.
- 348 ELBERS, JOHANN H., *Montjoie near Cologne*—Manufacturer.
Fancy cassimeres of 56 inches and 28 inches. Buckskins for winter and summer. Fancy cassimeres, &c.
- 349 JANSEN, JOHN W., *Montjoie near Cologne*—Manufacturer.
Specimens of woollen stuff for summer paletots. Woollen summer buckskin, worked with silk. Woollen winter buckskin, manufactured chiefly from wools of Silesia.
- 350 OFFERMANN, F. W., *Imgenbruch, near Aix-la-Chapelle*—Manufacturer.
Various specimens of coloured buckskin.
- 351 MERKELBACH T., & SON, *Montjoie near Cologne*—Manufacturers.
Specimens of winter, summer, and fancy buckskins.
- 352 MUELLER, M. W., *Montjoie near Cologne*—Manufacturer.
Specimens of winter and summer buckskin. Summer paletot stuff of Australian wool.
- 353 SAUERBIER, J. A., *Montjoie*—Manufacturer.
Specimens of winter, summer, and fancy buckskin. Paletot stuffs, &c.
- 354 SCHEIBLER, F. J., *Montjoie near Cologne*—Manufacturer.
Specimens of summer buckskins, woven with treddles, and Jacquard designs. The diagonal stripes are not obstructed by the stripes in the warp. Sample of flannel, made from yarn which is a mixture of silk-waste and wool. Hitherto, silk and wool have only been used together twisted, or the warp was silk and the weft woollen. The peculiarities of this article are, that the silk and wool are more solidly united, and may be spun finer than when alone. Jacquard designs for winter goods.
- 355 ULENBERG & SCHNITZLER, *Opladen, near Cologne*—Manufacturers.
Woollen yarns: three-thread grey, oval, and superfine lilac. Knitting worsted yarns, in Nos. 14, 16, 18, 22, and 26, various colours.
Patterns of screws: the wire produced from Rhenish and Westphalian iron.
- 356 MENZERATH, JOHN, *Imgenbruch, near Aix-la-Chapelle*—Manufacturer. (Agents in London, Messrs. Droin, Crüger, & Co., 47A Moorgate Street.)
Specimens of black cassimeres (satin-de-laine) manufactured from Silesian wools.





- A. F., & SONS, Burtscheid, near Aix-la-Chapelle**—Manufacturers. Agent in London, Henry Hoffman.
white cloth; white kerseymeres for court use; satin for court dress; satin in fancy skin in fancy patterns.
- P., Aix-la-Chapelle**—Manufacturer.
doeskins and ladies' cloth.
- A BROTHERS, Burtscheid, near Aix-la-Chapelle**—Manufacturers. (Agent, A. Heintz, 17 Ironmonger Lane, Cheapside.)
seres; demi-saison and summer; black and summer tricots.
- CHRISTOPH, Mülheim-on-the-Rhine, near Aix-la-Chapelle**—Manufacturer. (Agents in London, I. Blank.)
t of velvets: crimson and black, German Lyons and Genoa styles; mantilla, black t. Black figured velvet shawl. Worsted season; clear garnet; dark garnet; striped l with bayadère, for furnitures. Velvet
- r & BOCH, Wallerfangen Saarlouis, Mand Mettlach, near Treves**—Manufacturers proprietors. (Agents in London, W. Adolph.)
earthenware, in various shapes and with ornaments of the same material, but red with platina, gold, and paintings: hanging flower-pots, baskets, jugs, wine-owls, services for tea, fancy objects, &c. See objects is represented in the adjoining
- fine pottery-wares, of white and coloured l, printed, and decorated with gold: table vases, fancy objects, &c.
ery of black material with white enamel,
- re, the value of the exports exceeds that of 1,620,000 thalers. The German ornamental uses, in clay; the articles of d fayence; the stoves, elevated by the ns that have been imparted to them, to erior art—all these may compete with icts of foreign manufacture for cheapness.]
- , CHARLES LEWIS, Aix-la-Chapelle and Bruch**—Manufacturer. (Agent, B. Grut, 1e Street.)
cashmere cloth—Pensée, black, and olive.
- rs & Co., Borcette, near Aix-la-Chapelle.**
at, G. Enes, 28 Sion Chambers.)
avy fancy cashmeres. Mohair headings, and red; white, two qualities. Mohair sted yarns.
- RIEDEL, Aix-la-Chapelle**—Manufacturers.
bronze, for riding-coats. Piece of wool roisé; and black royal cashmere.
- LER, JOHN P., Düren**—Manufacturer.
black superfine cloth; wool-dyed blue Black superfine satin-de-laine. Made and e English methods.
- ., & SONS, Moselkern, near Coblenz**—Manufacturers.
rlots, viz.:—White ordinary blanket, with uperior white blanket; white and red Horse-cover, checked. Ordinary grey
- 367 HENDRICH, FRANCIS, Eupen, near Aix-la-Chapelle**—Manufacturer.
Specimens of fine and superfine cloths.
- 368 PAULI & BUCHHOLZ, Borcette, near Aix-la-Chapelle**—Manufacturers of Cloth.
Specimens of black royal; croisé; cashmere; satin; and satin tigre.
- 369 PEILL & Co., Düren**—Manufacturers.
Three pieces of wool-dyed cloth:—Blue Grecian, olive, and royal blue. Raw material: Silesian wool.
- 370 KAYSER, A., Aix-la-Chapelle**—Manufacturer.
Various pieces of thin twilled cloth, and ladies' cloth.
- 371 KESSELKAUL, JOHN HENRY, Aix-la-Chapelle**—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)
Various pieces of black twilled cloth, plain cloth, and doeskin.
- 372 KLEINSCHMIDT & VON HALPERN, Burtscheid, near Aix-la-Chapelle**—Manufacturer.
Drap croisé noir Electoral. D'Amazone Corinthe; myrthe; and bronze: All piece-coloured, and manufactured exclusively from German wool.
- 373 KNOPS BROTHERS, ALOYS, Aix-la-Chapelle**—Manufacturers.
An assortment of black cloth, plain, and twilled; and black doeskin.
- 374 SCHOELLER, L., & SONS, Düren**—Manufacturers. (Agents, W. Adolph & Co., St. Mary Axe.)
Specimens of woollen cloths:—Wool-dyed blue cloth; pomme de rhène; black. Sourier. Claret. Raisix de Corinthe. Crêpe de laine, broncé d'or, blue.
- 375 THYWISSEN BROTHERS, Aix-la-Chapelle**—Manufacturers.
Various assortments of light twilled cloth; doeskin; light and heavy paletot; light and heavy tricot; light fancy cashmere; silk twisted; and heavy fancy cashmere.
- 376 STERNICKEL & GUELCHER, Eupen, near Aix-la-Chapelle**—Manufacturers.
Two pieces of black twilled cloth.
- 377 PASS, C. G., Remscheid**—Manufacturer.
Silk ribbons and braid: silk ferret ribbon; fiolet twilled silk ribbon; coloured twilled silk braid; black shining braid; reddish twilled fiolet; white twilled silk; and coloured fine fiolet braid.
Black shining Renforce silk laces, of 1 yard length, with black tags.
- 378 ANTHONI, A., Imgenbruck, Aix-la-Chapelle**—Manufacturer. (Agents, B. Grut, 1 Basinghall Street, and Tootal & Brown, 73 and 74 Piccadilly.)
Various specimens of black cloth.
- 379 ANDREAE, C., Mülheim-on-the-Rhine, near Cologne**—Manufacturer.
Velvet ribbons. Gilets velours, double stamped—a new article. Gilets velours chiné; figured velvet; and silk plush.
- 380 FELTEN & GUILLEAUME, Cologne**—Manufacturers.
Flat iron-wire rope, manufactured from German iron-wire.
Ropes of Rhenish hemp. The Rhenish hemp is strong, and especially suitable for use in water.
Iron-wire ropes. Patent flat Manilla hemp ropes. Ropes, cords, and threads, manufactured from Rhenish, Russian, and Italian hemp; the finest from German, Flemish, and Russian flax.
Samples of starch, manufactured of wheat.

381 FEDERER BROTHERS, *Freiburg*—Manufacturers.

Black polished calf-skin leather.
 Boot leather.
 Boot-pieces of calf-skin leather.

382 HEINTZE & FREUDENBERG, *Weinheim*—Manufacturers.) Agent in Liverpool, Mr. L. Heintze, 1 School Lane.)

Calf-skins, japanned black, for boots and shoes; various qualities.

Calf-skins, black polished, for boots and shoes.

The general assortment consists of six qualities, A to F, of which three, A C F, are sent in for exhibition. These figures refer to the japanned skins, of which from 7,000 to 8,000 are manufactured by the exhibitors per annum; as also about 15,000 polished ones during the same period, and upon which 120 hands are kept in constant employ. Both articles are in great demand.

383 OBERCONZ, H., *Treves*—Manufacturer.

Skins of morocco and russia leather. Exhibited on account of their preparation in a new manner with known materials.

[The tanning has been effected by aspen and birch, till now not used in the department of Treves. The oil of the birch-tree, necessary in the manufacture of morocco leather, was generally obtained from Russia; but the exhibitor procures it out of the white and leathery parts (the epidermis) of the bark of the birch-tree, and obtains about 20 per cent. of pure oil, and 30 per cent. of oil for burning. The white and leathery portion having been removed from the bark of the birch-tree, the remaining parts are used for tanning.]

German and Java upper leather. Brown and black calf leather. Half a skin of leather for soles; tanned with the inner and smooth bark of the oak.

384 WEBER, WILLIAM, *St. Vith*—Manufacturer.

Hide of a Java black hide; calf's skin, tanned in five months, including the preparatory processes.

385 BERRES, MICHAEL, *Treves*—Manufacturer.

Leather, consisting of hides tanned with bark of the environs of Treves.

386 BUSCHMANN, JOSEPHUS WILLIAM, *St. Vith*—Manufacturer.

Hide of leather for soles; tanned skin of a Buenos-Ayrea ox.

387 LEUDERSDORFF, A. CAHEN, *Mulheim-on-the-Rhine*.

Specimen of neat's leather and calf leather; and pair of boot legs.

388 WEILAND, F., *Cassel*—Manufacturer.

Brace of pistols, with complete apparatus, in a case.

389 ENGEL, P. H., *Hanau*—Inventor and Manufacturer.

Proof prints, by an improved printing press, with some original stamps.

390 SOMMER, JOSEPHUS, *Heidelberg*—Manufacturer.

Portfolio and writing apparatus, velvet, with view of Heidelberg.

Glove-case, velvet, and ornaments of ivory.

Small writing-desk, papier-maché, with view of Heidelberg.

Shaving-case, complete.

Ladies' work-box, complete.

Pocket-books, gilt calf, with lock.

Memorandum-book, silk embroidery.

Cigar-cases, set in steel, and silk embroidery; velvet, and embroidery, &c.; porte-monnaie, mounted, in steel and embroidery, with superior mountings, with view of

Heidelberg painted on porcelain, and a view of Heidelberg etched on steel.

Spectacle-case: steel frame and embroidery.

391 KARCHER, FRIEDRICH, *Carlsruhe*—Inventor and Manufacturer.

Pounce-paper, or transparent tracing, drawing, and modelling paper, manufactured by the exhibitor, by a peculiar and patent process.

The principal merits of this article consists of its extreme cheapness, transparency, softness, and the absence of any species of oily, greasy, or other objectionable substances. It can be employed in the same way as any other drawing-paper, and it admits of being stretched and fixed on drawing-boards and frames, and will also bear painting on with water-colours, China-inks, varnish, &c.

392 HOESCH & SON, *Duren*—Manufacturers.

Tissue paper in different colours. Coloured post paper, in 12mo and in 4to. Blue, white, and extra fine white post paper. Writing paper in folio; and blue, with lines. Blue medium; white medium. Spelter plate for smoothing paper.

393 SCHUELL, LUDOLPH, *Duren*—Manufacturer.

Thick and extra thick post paper (glazed) in folio, &c.; large blue post; ribbed medium, &c.

394 PIETTE, LEWIS, *Dillengen*—Manufacturer.

Post paper, blue and white. Writing paper, white and coloured. Straw paper.

395 FLAMMERSHEIM, WILLIAM, *Cologne*—Manufacturer.

Rolls of tapestry, copied from original paintings.

396 MEIXEL, ANTONIE, *Baden Baden*—Manufacturers.

Knitted linen shawls, made with two needles of number 200 thread, exhibited on account of the beauty of the work.

397 ROESSLER, C. H., *Hanau, in Hesse*—Manufacturer. (Agents, Oppenheim and Co., 18 Bow Lane, Cheapside.)

A variety of felt and silk hats, particularly adapted for exportation.

398 LEIMKUEHLER, LEWIS, *Aix-la-Chapelle*—Manufacturer.

Black felt hat; black soft short-haired hat; gray hat, double rings; black silk hat.

399 SCHUETZENDORFF, H. J., *Cologne*—Manufacturer.

Gentlemen's ball-room boots with silk tops, to replace pumps and stockings; boots in buckskin without seam; and boots for children.

400 KOHLSTADT, LEWIS, *Cologne*—Manufacturer.

An assortment of braces and garters, of silk and caoutchouc.

401 WAHLEN & SCHMIDT, *Cologne*—Manufacturers. (Agent, W. Cordingley & Co., 18 Aldermanbury.)

An assortment of kid gloves, and card of patterns.

402 SCHÖN, PHILIP, *St. Goar*—Manufacturer.

Saws for goldsmiths and silversmiths, and for carpenters and comb-makers.

The blades are made of steel procured from watch-spring manufactories in Switzerland and France.

The teeth of the compass-saws are filed, and English files only can be used for that purpose.

403 ULRICH, JACOB, *St. Goar*—Manufacturer.

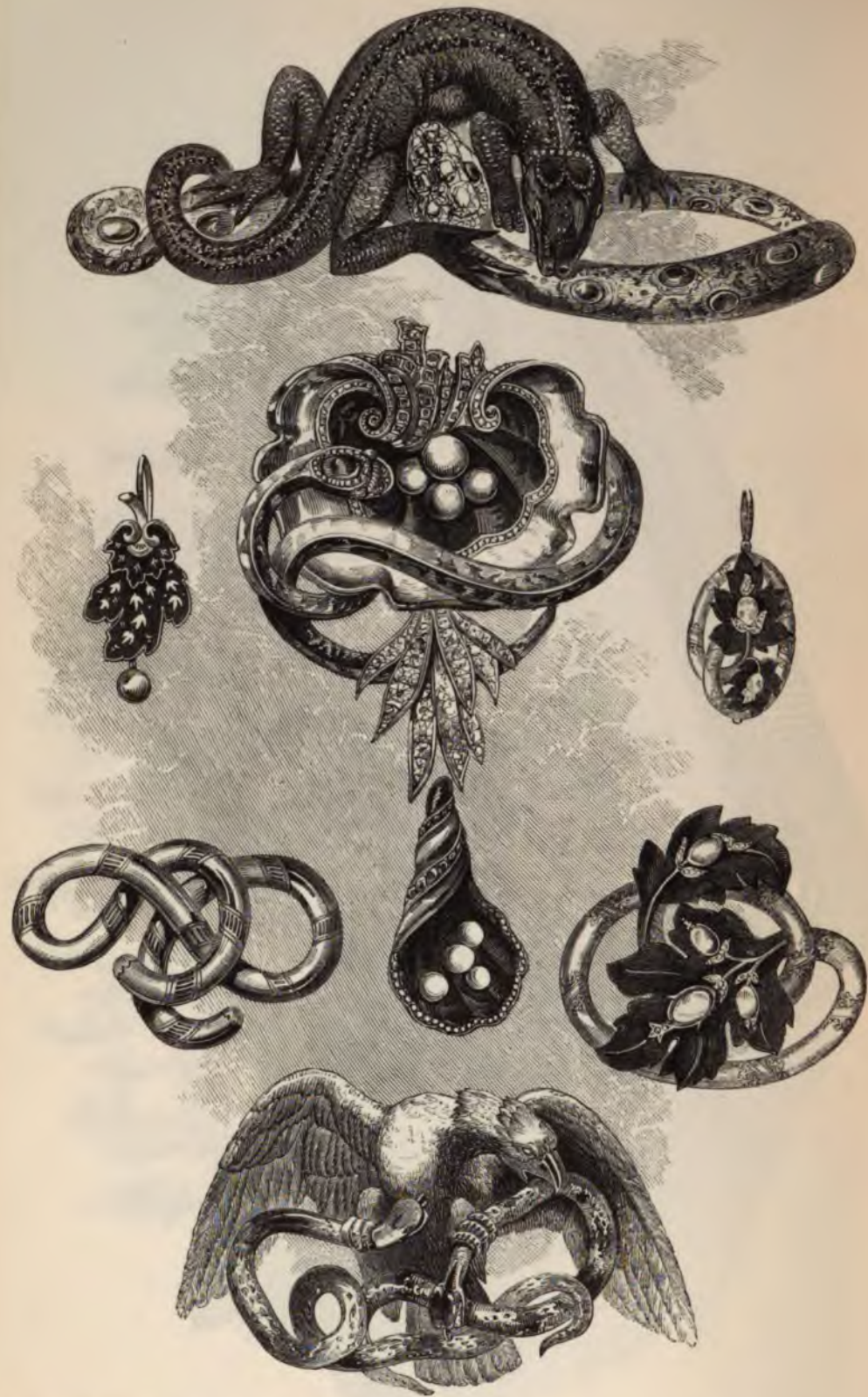
Saws, of different dimensions, for the use of goldsmiths, silversmiths, girdlers, comb-makers, turners in ivory, and joiners.



1



SET OF CHESSMEN AND BOARD, IN SILVER AND GOLD, MESSRS. C. M. WEISHAUPT AND SONS, ZOLLVEREIN.



153. SPECIMENS OF JEWELLERY. MESSRS. J. F. BACKES AND CO. FRANKFORT-ON-THE-MAINE. ZOLLVEREIN.





saws are manufactured of spring-steel. Those ing wood and horn are made of broad white teel; and those for sawing metals are made of old rings.

WEINECKER & CO., GEORGE ALBERT, Cologne—Manufacturers.

lea of pins, hooks and eyes, and elastic wires, ting Gothic arches, bearing the arms of the city ne.

SCHLEICHER, CHARLES, Schönthal, near Aix-la-Chapelle—Manufacturer.

nized cast-steel wire. Various wire rings, and of unfinished and finished needles. The raw is of English origin.

LESSMANN, JUSTUS, Newwied on the Rhine—Manufacturer.

us culinary and other articles made of rolled sheet l tinned with Banca tin, consisting of stew-pans tea, water-cans, ladles, tea-kettles, coffee-pots, a, frying-pans, &c.

RISSEL (Widow) & SON, Aix-la-Chapelle—Manufacturers. (Agent, O. Frauenknecht, 80 Bishopsgate Street Within.)

lea of different qualities of needles, manufactured steel from the works of Messrs. Sanderson Brod Co., Sheffield, and rolled and drawn into wire any. Fancy bodkins, knitting pins, &c.

LAESSEN, JACOB, Cologne—Manufacturer. (Agent, J. Hoffstaedt, 4 Bridge Street, Blackfriars.) decorated mantle stoves and ovens; modelled, cast, by the exhibitor.

JUENGER, JACOB'S (Widow), Hanau—Manufacturer.

sortment of samples of enamel:—Red; rose opal, d dark; dark blue, transparent and opaque; light asparent, and opaque; violet, transparent; grey, ent; black; green, light and dark, transparent ue; yellow, light and dark, transparent; orange; opaque; opal; turquoise, white, &c.

basis of all kinds of enamel is a pure glass, which red either semi-transparent or opaque by the re of metallic oxides. White enamel is made by the oxide of tin with glass.—J. H.]

STEINHÄUER & BIER, Hanau, Hesse—Inventors and Manufacturers.

ge assortment of jewellery, consisting of brooches, s, and rings.

SACKES, J. F. & Co., Hanau, Hesse—Inventors and Manufacturers. (Agent in London, T. Sachs, St. George's Terrace, Hyde Park.)

ge assortment of jewellery, consisting of brooches, s, bracelets, watch-hooks, rings, medallions, &c.

WEISHAAPT, C. M. & SONS, Hanau. (Agent, Mr. Robert Phillips, Messrs. Phillips and Son, 31 Cockspur Street, London).

chess-men and board, in silver and gold in renais- ple, ornamented with enamel, precious stones, and The chief figures are portraits of the Emperor V., and his daughter Margareta of Parma, older of the Netherlands, King Francis I. of and his sister Margareta of Valois.

et is represented in the annexed Plate 154. t in silver, with a coral tree, various precious nd four malachite slabs, in the renaissance style, g two doors, which open with a spring, and a box. asket is represented in the annexed cut.



Weishaupt's Silver Casket.

413 **HAULICK, FREDERICK G., Hanau—Manufacturer.**

Flower, in brilliants and rubies, with leaves of emerald and green enamel, in a vase of gold and enamel. The flower can be detached in the middle of the stem, and used as a brooch or hair pin. This flower is represented in the annexed cut.



Haulick's Jewel Flower.

414 **WAGNER, ADOLPHUS, Sulzbach, near Saarbrück—Producer.**

Bottles, manufactured for Rhenish sparkling wine; for hock, with a flat bottom and a ribbed neck; and for hock, with concave bottom and a smooth neck. Various other bottles.

415 **WIEGANDT, J., Cologne—Manufacturer.**

Circular tablet, of mosaic-work, composed of 24,700 pieces.

- Specimens of inlaid work for floors, consisting of concentric circles and radii, containing 2,996 pieces.
Two of the same sort, with stars, and 864 pieces.
- 416 KRAMER, CHARLES A., *Cologne*—Inventor.
Plaster cast in the rococo style. Cornice, and ornaments for keystones, &c., in stucco.
- 417 ENGELHARD & KARTH, *Mannheim*—Manufacturer.
Several specimens of stained paper, stretched on wooden frames.
- 418 NOE, O., *Hanau, Hesse*—Manufacturer.
A model of a chandelier, in gypsum.
- 419 FALLER, TRITSCHLER & CO., *Lenzkirch in the Black Forest*—Manufacturer.
A variety of straw hats for gentlemen, youths, and children, of different styles.
Round, flat, and square cigar cases.
All of purely home produce. The primitive material, the straw, cultivated in the district of Lenzkirch, and cut by the manufacturers, who subsequently bleach, plait, and work it into hats. On comparing the different methods employed for the produce of this article at Florence and other parts of Tuscany ranking high in this class of manufacture, it was discovered, that there had been lately introduced a superior method of plaiting in four meshes; that is, numbered straw, and which alone could produce first-rate qualities. The exhibitors have, for several years, endeavoured to introduce the same process at home, and have succeeded in giving this texture to about one-half of their produce.
- 420 NEES, A. F., *Cologne*—Manufacturer.
Samples of patent flat or curved wood mouldings, chiefly employed for making frames, and by upholsterers, decorators, &c.; made in various breadths from $\frac{1}{2}$ an inch to 10 inches.
- 421 PALLEMBERG, H., *Cologne*—Manufacturer.
Lady's escritoire of rosewood, with carvings, containing secret drawers curiously arranged.
- 422 KENDALL, H., *Cologne, and Aix-la-Chapelle*.
(Agent in London, Joseph Kendall, 8 Harp Lane, Great Tower Street.)
Various samples of Eau de Cologne, pomatum, sachets, assorted perfumes, toilette soap, &c.
- 423 LEVEN, FRAM, *Heidelberg*—Manufacturer and Inventor.
Heads of European animals, natural size, modelled from nature, and executed in an imitation of bronze, for the decoration of hunting rooms—
1—4 Stags'-heads, with real antlers. 5—8 Fallow-deers. 9—12 Wild boars. 13—16 Wolves. 17—18 Wild goats, with plaster of Paris horns. 19—24 Deers. 25—30 Chamois' head, with real horns. 31—34 Greyhounds. 35—38 Pointers. 39—42 Spaniels, with long hair. 43—48 Terriers. 49—54 Foxes. 55—60 Wild cats. 61—66 Hares. 67—70 Horn-owls. 71—76 Eagles. 77—82 Capercalzas.
- 424 SPENDECK, J. P., & Co., 18 *Grosse Neugasse, Cologne*.
Samples of eau de Cologne, of various qualities and in various-sized bottles.
- 425 MARTIN, MARIA CLEMENTINA, *Cologne*—Inventor and Manufacturer.
Eau de Cologne; Carmelite spirit of melissa.
- 426 FARINA, JOHANN MARIA, *Cologne*—Manufacturer.
Specimens of eau de Cologne, in the different sizes of bottles.
- 427 HERSTATT, C., & Co., *Cologne*—Manufacturer.
Cologne water of different qualities.
- 428 MOOSBRUGGER & KOBBE, *Coblentz*—Manufacturers.
Table slabs of artificial marble, inlaid with mosaic work. Cash-box of the same.
- 429 WEYGOLD, A., *Erkelenz*—Inventor.
A piece of tapestry on canvas—Ruth and Boaz—containing upwards of 480,000 stitches, in 4,860 squares.
- 430 HECKEL, CARL FERDINAND, *Mannheim*—Collector and Preserver of Plants.
Picturesque groups of dried alpine plants.
A volume containing a collection of 25 specimens of alpine plants. These pictures are formed solely of plants, as produced by nature, without any co-admixture of colours or dyes. They form elegant and instructive additions to an herbaria, or collections of *certu*.
- 431 CAUER BROTHERS, *Creuznach*—Inventors.
Statue:—Arminius, prince of the Cherusci, a hostage at Rome, meditating over the deliverance of his country; designed and modelled in plaster of Paris by the exhibitor.
A faun, in plaster of Paris, carrying a vine-branch.
Full-length figure, in plaster of Paris.
Two other figures.
- 432 DICKERT, THOMAS, *Bonn*—Manufacturer.
Relievo of the "Siebengebirge," on the Rhine. Relievo of Mount Vesuvius. Intended to illustrate the geological and orological relations of the respective regions. They have been executed from the best scientific materials, and the personal observations of the exhibitor.
[These relief maps, of which there are several in the Exhibition, are well adapted for educational purposes to give a comparative idea of the actual physical features of a district. The Rhine, between Coblentz and Bonn, is so remarkable for the form and arrangement of the hills, and the shape of its small lakes, all of which are of volcanic origin, that a comparison between this district and the country around the recent volcano of Mount Vesuvius cannot fail to be instructive. The Germans were the first to introduce relief maps at moderate prices.—D. T. A.]

c. PRUSSIA AND LITHUANIA.

- 433 SAUKEN, A. VON, *Julienfelde*—Producer.
Two wool fleeces.
- 434 WAECHTER, J., *Tilsit*—Producer and Manufacturer. (Agent in London, A. Gubba.)
Linseed and rape-seed cake. Grained and powdered animal charcoal. Scum of sugar for manure.
- 435 HERMANN, C., *Dantzic*—Manufacturer.
A pair of bronze chandeliers, Greek style, after patterns of candelabra found in Pompeii.
- 436 LIECK, A., *Marienwerder*—Manufacturer.
Coffee machine and teapots, particularly fitted for travelling, being of small size and easily heated. A machine for mashing almonds for marchpanes.
- 437 LOEWENSON, M., *Tilsit*—Manufacturer.
A tower in filigree work set in garnets, similar to those used by the Russian Jews at the celebration of the Sabbath.
- 438 MANNHEIMER, W., *Königsberg*—Proprietor.
Two pieces of amber of 6 and 4½ pounds weight, exhibited on account of their size and beauty.
- 439 HOFFMANN, C. W., *Dantzic*—Manufacturer.
Sundry articles manufactured from amber; beads of the same, exhibited on account of their beauty and workmanship, and to show the difficulty of joining small pieces; the uniformity of colour is very difficult to obtain. The beads are sent to show the way in which they are prepared and packed for the trade.
- 440 HOFFMANN, G. I., *Dantzic*—Manufacturer.
Assortment of amber beads, sundry articles manufactured from amber.
- 441 ROY, W. VON, *Dantzic*—Manufacturer and Collector.
A cabinet containing amber (raw), arranged according to natural history, which it has taken 25 years to collect. A tea-tray ornamented with the arms of Great Britain. Snuff-boxes. A hilt of a dagger. Brooches. Bracelets and seals. All manufactured from amber, and ornamented with silver.
[Amber is the resinous exudation of an extinct genus of coniferous trees, formerly existing in great abundance in the Northern hemisphere, and now washed, or dredged up, on the shores of the Baltic, chiefly between Königsberg and Memel, but sometimes on the coast of Scandinavia. With it are sometimes found fragments of lignite, and the amber itself frequently incloses small insects and other organic substances. The outside of the amber is often marked with the impression of branches and bark, and the inside, in one instance, presents the corolla of an unknown flower. The composition of amber is complicated, and not invariable. It contains a volatile oil, two resins soluble in alcohol and ether, succinic acid, and an insoluble bituminous substance.—D. T. A.]
- 442 REICHEL BROTHERS, *Tilsit*—Manufacturers.
Various strings of musical instruments.
- 443 HEYDENREICH, *Teacher at Tilsit*—Proprietor.
A scene from sacred history carved in wood.
- 444 GRZYBOWSKI, *Vicar of Berent*—Proprietor.
A carving of wood in a frame, representing a vase containing flowers and birds, &c.

d. PRUSSIA.—ELECTORAL HESSE.—LIPPE.

- 445 ROYAL PRUSSIAN SALT WORKS, *Neusalzwerk, near Rehme*.
Samples of salt, fine and middle grains, obtained from the soole (brine), gradually purified.
- 446 VORSTER, C. D., *Eilpe, near Hagen*—Producer.
Samples of rough or cast-iron, made malleable and decarbonised by a new process, and stated to be rendered equal to steel. Adapted for cutlery.
- 447 LEHRKIND, FALKENROTH, & CO., *Haspe, near Hagen*—Manufacturers; and EWALD RIEPE, Patentee, 38 *Finsbury Square*.
Specimens of raw puddling steel made from German charcoal pig iron, from Belgian refined metal, and from Ynescedwyn refined metal. Puddled steel in bars and loops, refined by the new patent process, from Belgian, German, and Ynescedwyn pig iron. Rolled puddled steel. Puddled steel refined by the old German welding process. Patent waggon axle of refined steel.
The steel exhibited is prepared in puddling furnaces with coals. It is employed in large quantities on the Continent for the manufacture of cutlery, waggon axletrees, files, springs, &c.
It is exhibited for its cheapness, hardness, tenacity, and elasticity.
- 448 STINNES, H. A. S. MATHIAS, *Mülheim on Ruhr*—Producer.
Samples of coke, free from heterogeneous substances, manufactured from pit-coal of the Victoria Mathias mine.
- 449 DRESLER, J. H., sen., *Siegen*—Manufacturer and Producer.
Samples of iron ore from Hohegrethe; sparry iron ore, from Peterbach and St. Andreas; and brown iron ore, with and without manganese, from Huth; all near Hamm. Laminated white cast-iron. White cast iron, forged pig. Mottled iron. Grey pig iron, and grey metal foundry pig. Bar iron.
- 450 THE UNITED COAL MINES (SÄELZER and NEU-ACK), *Essen*—Producers.
Specimen of coal, to show the produce of the mines of the exhibitors. This coal is considered to be more bituminous, and to contain less sulphur than others of the district.
- 451 LAMBINON, ULRICH, & CO., *Brilon, near Arnsberg*—Producers.
Specimens of lead and silver ore; sulphuret of lead and zinc.

452 ROCHATZ, CHARLES, *Mülheim on Ruhr*—Manufacturer. (Agents in London, Messrs. N. M. Rothschild, 2 New Court, Swithin's Lane.)

Crystal vases with white zinc. Samples of roasted zinc ores and spelter; of zinc ores and rolled zinc. The raw materials from native mines.

White zinc is intended as a substitute for white lead, as the manufacture is not injurious to the health of the workmen. The zinc is obtained in two ways, viz., out of spelter produced from the sulphuret of zinc, or direct from the same ores by a particular process, for which a patent has been taken out.

[A Commission, appointed by the French Government, examined this question, and their report was favourable to the employment of white zinc. The effects of white-lead manufacture, as carried on at present, are exceedingly injurious to the health of those engaged in its preparation; but manufacturers who supply their workmen with drinks acidulated with sulphuric acid state that they thus secure them from lead-colic: the lead absorbed is converted into the sulphate, and thus is nearly inert. It has been stated that in white-lead manufactories, the men, from inhaling the oxide of zinc, suffer from nausea: this has been denied, where proper care has been taken to secure the workmen from the oxide of zinc during the process of its formation.

White zinc is manufactured by melting the metal, and, while it is at a high temperature, driving a current of atmospheric air upon its surface; the metal very rapidly oxidizes, and the oxide passing out of the furnace is collected—R. H.]

453 BÖRING, ROEHR & LEFSKY, *Limburg on the Lanne*—Producer.

Rolled and hammered pieces of puddling steel; round rolled and hammered samples of steel. Made of German pig-iron, worked in puddling furnaces with pit-coal, and rolled or hammered as it comes out of the furnace. Exhibited in consequence of the assumed importance of the process.

[The peculiarity of this process would appear to consist in a method by which the iron in the puddling furnace, where it is usually kept in a state of fusion for the purpose of separating all volatile matters, is made to absorb the necessary quantity of carbon to convert it into steel.—R. H.]

454 HAMBLOCH, JACOB, *Crombach, near Siegen*—Proprietor.

Specimens of refined steel. Raw materials—sparry iron ore from the Müsen mines, which, after smelting with charcoal, produces the Müsen steel; when this is forged with charcoal, the best qualities are obtained for cutlery and steel casting.

455 HANIEL, FRANCIS, *Ruhrort on the Ruhr*—Producer.

Specimens of coal and coke. Coal from the following mines: Heinrich, Steingatt, Hagenbeck, Sälzer and Neuack, and Zollverein. Coke from Schölerpad, Sälzer, and Newack.

[The small but important coal-field of the Ruhr, conveniently situated near Dusseldorf, on the Rhine, and occupying a triangular area of nearly 120 square miles, appears to be a continuation, across the Rhine valley, of the Belgian coal-fields, and is of the same geological age. It consists of alternating bands of sandstone and shale, with seams of ironstone and coal reposing on other beds of sandstone and shale, which are unproductive, and then on carboniferous limestone. The coal is bituminous, and of fair quality, and is much used, both in the numerous iron works and factories of Westphalia, and in many places on the Rhine, where it can be conveniently conveyed by water carriage. It enters into competition with Saare

coal, and is much worked. This coal resembles that of some English coal-fields, and is worked in the same manner. It is conveyed both up and down the Rhine; and bears about the same price as that of the Saare, which is, however, generally preferred. The quantity is not very large. The cokes obtained from the Ruhr coal are tolerably good.—D. T. A.]

456 HARKORT & SON, *Wetter on the Ruhr*—Manufacturers.

Samples of German crude steel, for cast-steel sword and scythe steels; best steel for knives.

Blister steel, converted from charcoal-iron.

Common steel, for files.

Spring steel, and steel for hatchets. The German crude steel is used for refining or shearing steel, and making cast steel; the blister steel is used in the manufacture of export articles.

[The ore from which this steel is made is a crystalline carbonate of considerable purity, and is called by the Germans *stahl-stein*, or stal ore. The iron obtained from this ore by smelting with charcoal is of a peculiar quality, and well adapted to form a cheap substitute for the finer kinds of steel in certain manufactures. It has been supposed that the presence of a considerable percentage of peroxide of manganese in the laminated varieties of spathic iron, commonly used for this purpose, is favourable for the conversion into steel. The *stahl-stein* is generally of pale-brown colour, darkening on exposure, and is more readily reduced after it has thus become modified. It resembles some carbonates of lime in appearance, but is heavier, harder, and effervesces much more slowly in acids. It is very abundant, and occurs in veins, often of enormous thickness, in Westphalia, Silesia, and in the province of Biscay in Spain.—D. T. A.]

457 KRIMMELBEIN & BREDT, *Barmen*.

Samples of red prussiate of potash. Cyanide powder. Powder of royal blue. Composition for royal blue; and for porcelain blue. Extract of archil. Safflower carmine; indigo. Indigo extract. Prepared catechu. Pink salt. Stannate of soda. Bichloride of tin. Tin salt, pure. Tin powder; and muriate of ammonia.

[Archil, litmus, cudbear, are the names given to a purple dye, prepared by the joint action of air and ammoniacal salts, from various lichens, particularly the *Rocella tinctoria*. Safflower carmine (*Carthamine*) is obtained by washing safflower (*Carthamus tinctorius*) in water, until the yellow colouring matter is removed, then dissolving out the carthamine by a weak solution of carbonate of soda, and precipitating with dilute sulphuric acid. It is a fine red colour, and dries with a cantharides-green bronze: it is the colour sold dried in saucers, known as pink saucers. Catechu, is the dried extract of the tree *Mimosa catechu*, a native of India: it is sometimes called terra japonica: it contains a peculiar tannic acid, which differs from that obtained from nut-galls in some of its properties. Apart from its employment in tanning, catechu is used in combination with different metallic and earthy salts employed as mordants in dyeing. Tin salt is a compound of peroxide of tin and potassa (stannate of potassa), and is made by deflagrating tin with nitre.—W. D. L. R.]

458 CURTIUS, JULIUS—*Duisburg on the Rhine*.

Blue and green ultramarine. Used by printers, painters, &c., and for tapestry; they resist alum, and improve by exposure to the air.

459 GUTHEIL & Co., *Dusseldorf*—Producers.

Specimen of prussiate of potash (ferrocyanide of potassium).

460 STOHMANN & WOSTENFELD, *Neusalzwerk, near Minden*—Manufacturers.

Chemical products from the mother-ley of the salt-works near Minden, chiefly combinations of bromine.

[Bromine was discovered by M. Balard, of Montpellier, in France, in the year 1826. He obtained it from the mother-liquors of the salt works in which sea-water was employed. It is an elementary substance, liquid at ordinary temperatures, of intense reddish-brown colour, and possessing a powerful odour; at about 13° below the zero on Fahrenheit's scale it solidifies to a crystallizing solid of laminated structure; and at about 116° it boils, giving off reddish-brown vapours. It bleaches vegetable colours, and colours starch of an orange tint; its compounds are, with some exceptions, termed bromides; the combination with oxygen, best known, is called bromic acid, and the combinations of bases with this acid are termed bromates.—W. D. L. R.]

461 WESENFELD & Co., *Barmen*.

Samples of soda-ash, containing 99½ per cent. of carbonate of soda, for glass manufacturers; caustic soda, from the red mother-liquor of soda-ash, adapted for soap-boilers; chloride of lime, containing 30 per cent. of chlorine; antichlore, a preparation for neutralizing chloride of lime after bleaching; adapted for paper-makers.

["Antichlore" is sulphite of soda; that is, a compound of sulphurous acid and soda. In effecting its object, the sulphite of soda becomes converted into sulphate of soda, and the chlorine combines with hydrogen, and forms muriatic acid (hydrochloric acid), which may be neutralized by an alkali.—W. D. L. R.]

462 HORSTMANN & Co., *Horst, near Steele*—Manufacturers.

Samples of azure-blue smalt. Samples of zaffre.

[Smalt is a glass coloured with oxide of cobalt, and reduced to a fine powder: it is used for bluing writing and other papers; but the introduction of artificial ultramarine has considerably diminished its consumption for that purpose. Zaffre is an impure oxide of cobalt, obtained by roasting arsenical cobalt ores.—W. D. L. R.]

463 The ROYAL ALUM WORKS, *Schwensal, District of Bitterfeld*.

Refined and common potash-alum crystallized; containing only a small proportion of iron, and manufactured from native ores.

Sulphuric acid clay, known in trade under the denomination of aluminas; which contains but little iron; manufactured from native ores by exposure to the frost during the winter. Common and refined potash-alum crystallized; manufactured from native alum slate. Specimens of the alum schist, containing but little pyrites. Alum manufactured from alum schists, by simple exposure.

464 MATHES & WEBER, *Duisburg on Rhine*—Manufacturers.

Muriatic acid, pure, 21° 1', Beaumé, exempt from iron and sulphurous acid. Bleaching powder, or chloride of lime, 35 per cent. chloride. Sulphate of soda, 98 per cent. soda crystals, nearly pure; soda ash, carbonate of soda, 48 per cent. dry carbonate; carbonate of soda, caustic soda, 60 per cent.

[Muriatic, or hydrochloric, acid is a compound of hydrogen and chlorine: under ordinary circumstances, it is a gas readily absorbable by water, but at a pressure of 0 atmospheres it is condensed to a colourless liquid. The

aqueous solution is the muriatic acid of commerce, and is usually contaminated with iron and other impurities; 21° of Beaumé's hydrometer = 1.170 specific gravity.

Chloride of lime (hypochlorite of lime, oxychloride of calcium) is the well-known bleaching-powder. It is a mixture of hypochlorite of lime and chloride of calcium, which are soluble in water, and a variable excess of lime, which remains undissolved. It is obtained by exposing recently-slaked lime to chlorine gas, which is readily and largely absorbed.

Sulphate of soda is a compound of sulphuric acid and soda; it is manufactured in considerable quantities at the alkali works, as the first step in the production of soda from sea-salt. By the action of sulphuric acid (oil of vitriol) on chloride of sodium (common or sea-salt), muriatic acid is driven off in vapour, and an impure sulphate of soda remains: this may be purified by solution in water and crystallization therefrom. Formerly, the muriatic acid was allowed to escape, and very high chimneys were built to carry the destructive fumes high into the atmosphere; but of late they have been condensed by conducting them into chambers containing water, which absorbs the gas; and instead of wasting the acid, as formerly, it is now decomposed into its components, and the chlorine employed in the formation of bleaching-powder.

Carbonate of soda (common washing-soda) is a compound of carbonic acid and soda, and is termed soda-ash, crystallized soda, &c., according to the state it is sold in, commercially. It was formerly obtained, almost exclusively, from sea-plants, and was then largely imported into this country from Spain under the name of barilla; but now it is obtained from salt, and forms an important branch of manufacture in Great Britain. Sulphate of soda, obtained in the manner described above, is mixed with coal-dust and chalk or limestone (carbonate of lime), and heated to redness in a reverberatory furnace; the sulphuric acid of the sulphate of soda is decomposed, and the sulphur resulting therefrom unites with the calcium of the limestone, whilst the carbonic acid passes from the lime to the soda. The black mass is exposed to the action of water, which dissolves the carbonate of soda, and the saturated solution is evaporated to dryness; a crude soda-ash is thus obtained, which is purified for some purposes by re-calcination with coal-dust, re-solution, and re-crystallization; but it is likewise largely employed in the crude state.—W. D. L. R.]

465 HESSE ELECTORAL COLOUR MANUFACTORY, *Schwarzenfels, near Schluchtern*—Manufacturer.

Blue colours (smalt). Specimens of various blue colours. Strewing blue. Eschar and washing blue. Violet smalts. Zaffers. Nickel, metallic, with calcined nickel. Nickel oxide. Nickel with ultramarine.

466 SCHEAMM BROTHERS, *Neuss on Rhine*—Manufacturers.

Dressing-starch, for fine linen, cotton, and silk wares; burnt starch, in three qualities, for factories; pipe starch; ringed and powdered starch.

Raw material:—Wheat, of the first quality.

467 ROCHOLL, THEODOR, *Minden*—Importer and Manufacturer.

Various samples of Havannah and Guajaquil cigars.

468 CARSTANJEN, AEN FRIEDERICH, jun., *Duisburg, near Dusseldorf*—Manufacturer. (Agent for London, Messrs. Mess & Co.)

Samples of tobacco, snuff, and cigars. The tobacco leaf is obtained from the East and West Indies as Wurtemberg.

469 JÄGER, CARL, *Berlin*—Manufacturer. (Agent, M. J. G. Behrens, 14 St. Mary Aze, London.)

Extract of safflower. Two bottles of safflower. The extract is drawn from the pigment of safflower, and used to give silk, cotton, linen, paper, and artificial flowers a fine rose colour.

470 ELMENDORF, E. F., *Isenhorst near Bielefeld*.
Samples of flax yarn and raw Ravensberg sand-flax.

471 BECKER, F. A., SAFF, & CO., *Fredeburg*—Manufacturers.

Pieces of extraordinary sized amadou; best, middle, and common qualities of yellow and black amadou. Caps with and without peak. The raw materials brought from Illyria.

[Amadou is prepared from a fungus, or species of mushroom, the *Boletus ignavus*, which grows on the old trunks of some trees, as the oak, ash, &c. The portion used is that underlying the outer bark, and overlying the ligneous matter: it is cut into thin slices and beaten; then boiled in a strong solution of nitre, and dried and beaten, and once more boiled in the nitre solution. Black amadou is impregnated with gunpowder. The fungus is useful in surgery for stopping hemorrhage.—W. D. L. R.]

472 DIEPERS, J. H., *Crefeld*—Manufacturer.

A machine, with forty reels, for twisting silk, half the usual size.

473 PIEPENSTOCK & CO., *Hoerde, near Dortmund*
—Inventors and Manufacturers.

A tubular axle, with two disc wheels for railroad wagons.

474 ERDELEN, CHARLES, *Elberfeld*—Manufacturer.

"Stays" for weavers, in wool, cotton, and silk. These stays are made of cast steel, and are preferable to reeds on account of their effect on the fabrics.

475 ULLHORN, CH. & GERH., *Grevenbruch, near Dusseldorf*—Manufacturer.

Cards for combing silk, cotton, wool, and tow. Card sheets for main cylinder; fancy. Fillets; diamond point; oblique points. Rings. Sheets in row and cross-row stitch. Fillets; needle points. Rings; needle points. Fillets and sheets, diamond points.

The leather of these cards is obtained chiefly from Belgium and Germany; the iron wire almost exclusively from England, but a small part from France and Germany.

476 ULLHORN, HENRY, *Grevenbruch, near Dusseldorf*
—Inventor and Manufacturer.

Three engines for coining, punching, and milling. A coining-press for dollars. A double-acting punching machine for dollars. A fourfold-acting milling machine for dollars. The raw materials from England and Germany. From 45 to 50 coins may be struck in a minute with a moving power equal to that of one horse.

477 SPANGENBERG, SAUER, & STURM, *Suhl*—Manufacturers.

Finished double-gun, with all necessary apparatus, in case. The gun has bronzed damask barrels and percussion locks, with revolving safety stop, silver mountings; the ground gilt; the iron portion engraved, and inlaid with hunting-scenes on gold; the barrels are also ornamented with gold; the stock is carved; the case worked and inlaid, with a peculiar lock and silver-gilt handle, and bound with silver.

German silver ornaments and a powder flask of stag-horn, in style of the middle age, with all the usual appurtenances.

478 SCHALLER, CASPAR, *Suhl*—Manufacturer.

Rifle, with cast-steel barrel, iron trimming; gold hunting piece, engraved; with iron spring lid; and a hunting scene carved on the stock. It is loaded at the stock, and has a contrivance for pointed bullets (*Spitz-kugeln*). A mould for pointed bullets; screw-drivers, with piston-key on one piece; brass case for cartridges; key for the sights; leading-measure of white copper; extra nipple.

479 SAUER, F. P., & SON, *Suhl*—Manufacturer.

A double-barrelled gun and single rifle. A single rifle, ornamented with silver, with all appurtenances, in case.

480 SCHWITZER & KIRSCHBAUM, *Solingen*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

A large collection of plain, polished, and gilt sword and sabre blades; infantry and cavalry swords, cutlasses, and sabres; officers' highly-finished swords, cutlasses, and sabres, with German silver and gilt mountings.

481 PISTOR, G. & W., *Schmalkalden, Kurhessen*—Manufacturers.

Rifle for pointed balls, with barrel of German cast steel, complete.

Double guns, with Damascused barrels, patent screws, fine chain-locks, &c.; and with welded and patent barrels. Double and single-barrelled rifles, hunting and children's guns, Swiss and needle guns, pistols, &c.

482 SUSS, W., *Marburg, Electorate of Hesse*—Manufacturer.

A very large thermo-electric battery, with an electromagnet, a heating apparatus, for producing a chemical reaction.

[A thermo-electric battery is formed by soldering together bars of two dissimilar metals, for instance, antimony and bismuth alternately, and arranging them in a bundle, so that each alternate juncture may be conveniently heated whilst the other is cooled; a feeble electric current is produced, the direction of which is from the antimony to the bismuth. Such an apparatus, in conjunction with a galvanometer, was employed by Melloni in the discovery and investigation of the diathermatous (transparency to heat) properties of bodies.—W. D. L. R.]

483 SEEL, H., jun., *Elberfeld*—Manufacturer.

Pharmaceutical apparatus and chemical utensils, including weights and measures, &c., of various sizes.

484 SCHREDTER, EMIL, *Dusseldorf*—Manufacturer.

A silk-drying and weighing machine, and a machine for accurately ascertaining the weight of silk in bales, &c., by small samples, upon the Talabot system. This machine has a balance of extreme delicacy of adjustment.

A six-inch theodolite, with telescope magnifying 30 diameters; the limb is divided to twenty minutes, and subdivided by two verniers to half a minute. The vertical circle is divided to thirty minutes, and is read by one vernier.

The specimens of philosophical instruments exhibited will be likely to impress every visitor with the firm conviction that the art of Fraunhofer and Reichenbach are not forgotten in Germany. The German mathematical and physical instruments are in use everywhere, and German balances are extensively used in English laboratories. There are several very interesting inventions connected with the electro-magnetic telegraph.

485 LAMPFERHOFF, J. & A., *Essen*.

New constructed solo clarinet. Solo flute. Military band clarinet.

[Solo is here used in contra-distinction to "military,"

ng peculiar clarionets and flutes used in concert
ial music. The "solo" clarionet, so called, is
used in *concert* for regular orchestral music.—
]

REITMEIER, THEODOR, *Münster*—Manufacturer.
and Inventor.
ent table pianoforte, of peculiar construction.

AM, GERHARD, *Wesel on Rhine*—Manufacturer.
(Agents in London, Messrs. Mess & Co.)
l pianoforte on Erard's principle; oblique piano-

VIEDEMAN, PFERDMENGES, & SCHMOELDER,
Reydt—Manufacturers.
as samples of cotton spun yarn and twist.

LÖPPER, HEBERMANN, *Wellentrup, near Oerling-
hausen*—Manufacturer.
of linen, made of hand-spun yarn, exhibited for
y, &c.

BOLTEX, J. W. WILHELM, & SON, *Ruhrort*—
Manufacturers.

les of woollen cloths:—Black doeskin, satin, drab
mixed grey, crossed-bar buckskin, doeskin, and
d white summer buckskin.

BRAUN BROTHERS, *Hersfeld, Hesse*—
Manufacturers.
rn of a large carpet, called the "Prussian national
len cloths—Light blue; dark green; dark blue;
loth; and black cloth, satin de laine.

FESCHENMACHER, J. E., & KATTENBUSCH,
Werden-on-the-Ruhr—Manufacturers.
mulberry, and American woollen cloth, with and
gloss; the raw materials from Silesia.

JOHANNY ABHOE, W. A., *Hückeswagen*—
Manufacturer.
us pieces of mulberry, green, bronze, and black
cloth. Black, green, and blue cashmere cloth.

BERCK (VAN DER), JOHN CASPAR, *Dusseldorf*—
Manufacturer.
sortment of square shawls, all woollen; long
Cravats (mufflers). Woollen goods for ladies'
and cloakings. Assorted in various styles and
; exhibited for quality and novelty.

WIESE BROTHERS, *Werden-on-Ruhr*—
Manufacturers.
pieces of woollen cloth, manufactured from
wool.

SCHUBEMANN & SCHRÖDER, *Lennepe*—
Manufacturers.
les of black cloth; the same twilled; mulberry and
th, dyed in the wool.

OELBERMANN, J. D., SONS, & Co., *Lennepe*—
Manufacturers.
mens of black and invisible-green woollen cloths.

HILGER BROTHERS, *Lennepe, near Dusseldorf*
—Manufacturers.
les of black twilled fine cloths:—Olive, bluish-
and dark-brown; olive, dyed in the wool; violet
ck.

HUECK, D. & A., *Ilerdecke-upon-Ruhr*—
Manufacturers.
ous specimens of woollen cloth:—Dahlia, blue,
ck.

500 HUFFMANN BROTHERS, *Werden-on-Ruhr*—
Manufacturers.

Piece of fine black woollen cloth, made of Silesian wool.

501 MOLL, CHRISTIAN, *Hagen*. (Agent in London,
Mr. John Henry Cohn, 3 Fenchurch Buildings,
Fenchurch Street.)

Samples of woollen cloth, black, indigo wool-dyed, ma-
rine blue, and mulberry.
Raw materials from Saxony and Silesia.

502 MEERTEN, JOHN F., *Urdenbach, near Düsseldorf*
—Manufacturer.

Moltongs and flannels. Striped flannel, blue, lilac, and
green, blue and dark red, brown, green, and violet, violet
and green, dark green and red, brown and light green.
Striped moltongs. Made from German wools and English
cotton yarn.

503 SCHNABEL BROTHERS, *Hückeswagen*—Manufac-
turers. (Agent, Charles Holland, 41 Finsbury
Circus.)

Various specimens of blue and black woollen cloths.

[Various causes have combined to increase the pro-
duction of woollen fabrics in the Zollverein of late years.
Among these must be especially noticed the important
improvements and extended encouragement that have
taken place in the rearing of sheep. The introduction of
improved machinery, engines, and processes, dating from
the setting up of spinning machines within the Zollverein
in 1817, by Cockerell. To these causes must be added the
active enterprise that has been awakened in quest of new
markets for our products, even in the remotest regions of
the globe.

The plain and fancy woollens, cloakings, merinos, and
Orleans flannels, of the German Zollverein, maintain a
high repute, and, as well as its silks, velvets, and half-
velvets, appear at the Exhibition in very great variety.]

504 SCHEIDT BROTHERS & Co., *Kettwig-on-Ruhr*
—Manufacturers.

Six pieces of doeskin, black, military grey, marengo,
light grey, and striped woollen cloth.

505 SCHEIDT, JOH. WILH., *Kettwig-on-Ruhr*.

Specimens of black satin de laine; black doeskin de
laine; grey satin and blue doeskin de laine;—all woollen.

506 CLARENBACH, J. D., & SON, *Hückeswagen*.

Samples of carded woollen yarn.
Patterns of wooden screws with flat, round, and square
heads. The screws exhibited for the clearness and sharp-
ness of the worm, or thread.

507 FEULGEN BROTHERS, *Werden-on-Ruhr*—Manu-
facturers. (Agent, A. Heintzmann, 17 Ironmonger
Lane, Cheapside.)

Woollen cloth:—Indigo blue cloth, dyed in the wool;
merveille cloth; and black cloth—for the North German
markets.

508 FORSTMANN & HUFFMANN, *Werden-on-Ruhr*
—Manufacturers.

Three pieces of woollen cloths; black and green.

509 DIEBGARDT, FREDERICK, *Vierssen, near Crefeld*
—Manufacturer.

Various specimens of black and coloured ve'
and silk and cotton.

Moleskin (plush, for boys' caps); plush, for
figured waistcoat velvet; and stamped waistco
silk and cotton.

Ribbons, of black and coloured velvet; and
and coloured edges; of fancy ve'
and fancy for hats, all silk.]

- Fancy velvet, and figured velvet with satin, stamped velvet, and black figured velvet ribbons, silk and cotton.
Figured velvet ribbons, silk and cotton, with white borders.
Small stamped collars, silk and cotton.
Velvet collars, with printed satin stripes, all silk.
Printed velvet collars; fancy waistcoat velvet, with satin; and terry velvet, and silk and cotton.
Terry velvet silk plush and stamped velvet à jour, for ladies' bonnets, silk and cotton.
Brown stamped velvet scarf, silk and cotton.
Green stamped velvet scarf, with white silk lining, all silk.
Black satin stuff, silk, and silk and cotton, in pieces.
- 510 DUYS, HIPP, & Co., *Crefeld*—Manufacturer.
Silk for dresses and waistcoats.
Patterns of silk umbrella, parasol, and dress stuffs.
- 511 STORK, PETER, *Crefeld*—Manufacturer.
Silk goods:—Coloured and black silk. Superior satin. Silk and satin cravats. Shawls and waistcoats.
- 512 KERKHOFF (VAN DER), & KREITZ, *Crefeld*—Manufacturers.
Various silk stuffs for parasols.
- 513 SIEBEL, C. W., & BRINCK, *Elberfeld*—Manufacturers.
Patterns of cord, gimp, ribbons, and other trimming.
- 514 SIMONS, JOHANN (Heirs of), *Elberfeld*—Manufacturers.
Shawls and silk wares. Silk shawls and scarfs. Ladies' neckerchiefs. Black sarcenet kerchiefs. Silk cravats; half silk cravats; ladies' cravats.
Waistcoats. Silk handkerchiefs (German web), (Indian web), and (imitation web). Silk velvet, and silk and half-silk stuffs.
- 515 SCHROERS, G. & H., *Crefeld*—Manufacturers.
Silk and velvet waistcoats. Fancy silk, fancy velvet, and plain velvet waistcoating. Exhibited for design and quality.
- 516 RAPPARD & Co., *Crefeld*—Manufacturers.
Assortment of silk cravats.
- 517 RAPPARD & GOESMANN, *Crefeld*—Manufacturers.
Velvet and silk goods. Jacquard velvet; levant; carré; frappé. Jacquard satin.
- 518 PELTZER, WILHELM, Sen., *Rheydt, near Crefeld*—Manufacturer.
Velvet, silk, and half-silk goods: Samples of velvet, satin, waistcoating, and satin cravats.
- 519 HOENINGHAUS, C. W., & SON, *Crefeld*—Manufacturers.
A large assortment of fancy silk and velvet ribbons.
- 520 HERMES BROTHERS & WOLFFER, *Crefeld*—Manufacturers.
Silk wares: silk for parasols; brocaded satin; figured satin; Jacquard figured satin; Jacquard satin. Armures satinés; brillantines canellis; jaspe broché; figuré; tartan satin; striped; quadrillé; tartan jaspé; brillante une cuit.
- 521 HEIDWEILLER, J. V., & SONS, *Crefeld*—Manufacturers.
An assortment of ribbons, silk, and silk and cotton; including black and coloured hat-bands, black and coloured edgings, and worsted braid.
- 522 NEUHAUS, H. J., *Crefeld*—Manufacturer.
An assortment of coloured and printed silks.
- 523 NEVIANDT & PFLIDERER, *Mettmann, near Elberfeld*—Manufacturers.
Coloured silk aprons. Black and coloured silk handkerchiefs for gentlemen, and fringed and other fancy handkerchiefs for ladies.
- 524 JACOBS & BERING, *Crefeld*—Manufacturers.
Silk, satin, and damask umbrella stuffs.
Silk parasol stuffs.
Specimens of taffety.
- 525 KABEL, JOHN, *Crefeld*—Manufacturer.
Specimens of silk and satin goods. Specimens of black armures, printed poul de soie Ecossais, and figured shot satin de Chine; and armures.
Striped and printed gros de Naples; the same printed and shot.
Striped and printed taffety.
Satin de Chine for parasols, with printed borders.
Shot satins for parasols, with figured borders.
- 526 LINGENBRINK & VENNEMANN, *Vierssen*—Manufacturers. (Agents in London, Messrs. Walter and De Vos.)
Specimens of black and coloured velvet, and black and coloured velvet ribbons.
- 527 KRAUHAUS & KAUBERTZ, *Crefeld on the Rhine*—Manufacturers.
Specimens of satin goods. Fine black satin and cotton mixture; crimson, and blue; black.
Satin for dresses; fine black satin.
Black plain and fine satin, all silk.
The plain satins, formerly made of silk, have of late been made of satin mixed with cotton, for the cheap markets.
- 528 KNEPPER & STEINHAUSER, *Greiz (Reuss)*—Manufacturers. (Agent in London, Charles Holland, 41 Finsbury Circus.)
Specimens of Thibet, French blue, satin d'Espagne, grey satin berber, and satin rayé vert.
- 529 TER MEER & Co., *Crefeld*—Manufacturers.
An assortment of silks for dresses and waistcoats, and various silk stuffs for parasols. Twilled silk with satin stripes for umbrellas.
Various sorts of black and twilled taffety.
- 530 MENGHIUS BROTHERS, *Vierssen, near Crefeld*—Manufacturers.
Various specimens of smooth and pressed silk and terry velvet, of different colours, and moleskin and stamped velvet.
Different coloured silk ribbons.
- 531 LUMM, J. W., & RUETTEN, VON, *Crefeld*—Manufacturers.
Silk goods and fancy Scotch stuffs of various descriptions.
- 532 MORGENROTH & KRUGMANN, *Elberfeld*—Manufacturers.
Various specimens of velours d'Utrecht, half woollen and coloured velvets, including purple, royal blue, claret, green, crimson, embossed cérisse, and violet for furniture, carriage linings, roleaux, &c.
- 533 GREEP, FR. WM., *Vierssen*—Manufacturer.
Silk for umbrellas and parasols.
Patterns of silk and silk velvet and satin, for dresses and waistcoats.
An assortment of cravats. Silk plush for hats and caps.
- 534 SCHEIBLER & Co., *Crefeld*—Manufacturers.
Watered silk, fancy velvet, and terry velvet ribbons; plain and narrow fancy ribbons, fringed; pressed velvet

ancy velvet ribbons. Smooth velvet and velvet
 velvet, plain and stamped; plain terry silk velvet.
 silk plush for hats; coloured plush for caps.
 and silk, with satin stripes.
 and glazed silk for ladies' dresses.
 of various colours, sarcenet for lining; red and
 a.
 silk for waistcoats.

UCK, H. VON, & SONS, *Crefeld*—Manufacturers.
 ack and coloured ribbon velvets, all silk.
 ty of fancy and figured silk ribbon velvets, for
 neck-ties, trimmings, and other purposes.
 silk broad velvets.
 silk velvet vestings.

KENSCHEN, H., & Co., *Crefeld*—Manufacturers.
 ortment of glacé silk used for ladies' dresses;
 for colour, design, and quality.

HERLICH & GREIFF, *Elberfeld*—Producers.
 silk buttons of various qualities.
 silk velvet; satin corded; double warp; and Eng-
 lish.
 silk buttons woven of sewing silk and organzine,
 and all over the button-moulds.

GRÖTE, H. G., *Ronsdorf, near Elberfeld*—
 Manufacturer.
 and dark blue silk ribbons. Silk and cotton hat-
 and bindings for shoes, ladies' cloaks, aprons, and
 and woollen coat-bindings. Cotton tapes.
 of silk, mohair, wool, and cotton (white).
 and tassels of silk, silk and cotton, mohair, and

OCKMANN, FRIEDRICH, *Wellentrup, near Oer-
 nghausen, Lippe Detmold*—Manufacturer.
 of grey linen. This linen is made of hand-spun
 yarn by hand, and is exhibited for durability. It is
 hand weavers, and bought from them at Oerling-
 y the merchants, and after being bleached is
 to almost all parts of the world.

ELHAGEN, W. R., *Bielefeld*—Manufacturers.
 of bleached linen and white linen pocket-
 chiefs, made from hand-spun yarn.

LLER, JOH. GISB., *Marl, near Recklinghausen*—
 Manufacturer.
 linen damask table-cloths, with damask table-
 with the arms of Count Westerhold, Baron Wolf-
 h, quartered with those of Count Hompesch;
 e Baron of Böselager, quartered with those of
 olf Metternich's.

VESSEL, F. W., *Spenge, near Bielefeld*—
 Manufacturer.
 ens of raw and bleached linen and handkerchiefs,
 and-spun Westphalian flax.

ESTERMANN, A. H., & Co., *Bielefeld and Cologne*—
 Manufacturers. (Agent in London, Mr. P. Amsel,
 10 Providence Row, Finsbury Square.)
 s samples of white bleached linen, manufactured
 ; spun by hand, woven on hand-looms, and
 on grass.

ESTERMANN, A. H. C. & SONS, *Bielefeld*—
 Manufacturers.
 s of bleached and raw linen. Bleached cambric
 chiefs. Damask table-cloths with napkins; drill-
 bleached table-cloth. Damask and drilling towels.
 and white table-cloths and napkins, with the royal

arms of Wurtemberg; of Mecklenburg Schwerin; of
 Hanover; and of Nassau.

Bleached damask table-cloth.

545 SCHWEMANN, G., Sr., & SONS, *Lippstadt*—Manu-
 facturers. (Agent, W. Meyerstein, 15 Watling
 Street, City.)

Various samples of twine, hand-spun. Exhibited for
 cheapness and quality.

546 The SPINNING SCHOOL, *Heepen, near Bielefeld*—
 Manufacturers.

Samples of flax yarn, spun by hand.

547 DOEBEL, HEINRICH JULIUS, *Halle on the Saale*—
 Manufacturer.

Bell-ropes and ladies' pockets of New Zealand hemp.
 Pressing cloth without seam, used in sugar manufactories.
 The raw machine yarn is from Leeds.

548 DELIUS & SONS, E. A., *Bielefeld*—Manufacturer.

An assortment of hand-spun bleached linen and linen
 handkerchiefs. Exhibited for the quality of the flax,
 the workmanship, and the result of the process of bleach-
 ing.

549 EICKHOLT, ANTONY (Heirs of), *Warendorf*—
 Manufacturers.

Various bleached linen table-cloths, napkins, and pieces
 of linen.

Brown and white linen, damask table-cloths and napkins,
 with wreaths of flowers, view of Stolzenfels, a hunting
 scene, and a table-cover of silk with views of Walter
 Scott's monument, the cathedral of Cologne, Stolzenfels,
 &c. Napkins with the coats of arms of several families.

550 LANDWEHRMANN, BROTHERS, *Joellenbeck, near
 Bielefeld*—Manufacturers.

Specimens of bleached and raw linen, made of hand-
 spun Westphalian flax, exhibited for durability and quality.

551 OLLERDISSEN, PETER, *Uerentrup, near Bielefeld*
 —Producer.

Samples of Bielefeld gray and yellow, and cambric flax.

552 KOENIGS & BUECKLERS, *Dülken, near Dusseldorf*
 —Manufacturers.

Flax, thread, cord, staves for weavers, and specimens
 of varnished oil-cloths for covering railway carriages.
 Samples of German flax.

Linen thread for weavers' leashes. Linen cord for
 Jacquard machines.

Reed staves for cotton and silk. Patterns for paper
 and imitation of oil-cloth.

Steel wire for weaver's reeds.

553 KISKEE, WILHELM, *Halle, near Bielefeld*—
 Manufacturer.

Samples of sail-cloth. Raw materials, both warp and
 web, of Westphalia. Spun hemp.

554 HOEBEKENS, H., *Lubbecke, near Minden*—
 Manufacturer.

Samples of twine and cord for packing.

555 HEIDSICK, L. AUG., *Bielefeld*—Manufacturer.

Specimens of bleached linen, and handkerchiefs
 of hand-spun yarn, and exhibited for fabric and dur-

556 KROENIG FRIEDR., WILHELM
 —Manufacturer.

Samples of raw linen, of best 1

557 MEVISSEN, GERHARD, *Dülken, near Düsseldorf*
—Manufacturer.

Thread and raw flax. White thread for embroidering. Patent white thread; black thread. Glazed black thread. Balls of crochet thread.

The threads are made of German and English machine-spun and German hand-spun yarns. The flax is grown in the Rhine Province, county of Düsseldorf, and Aix-la-Chapelle.

558 SCHNELLE, J. H. & SONS, *Bielefeld*—
Manufacturers.

Specimens of fine white linen yarn, made of the best German flax, spun by hand; exhibited for strength and durability.

Samples of threads of warp.

[The exports of linen productions from the Zollverein exceeded the importations, in 1842, by a quantity equivalent in value to 14 millions of thalers, those of cotton productions by 13 millions of thalers, of silk and half-silk goods by 6 millions and a half of thalers.

But since the above-named period a gradual decrease has been observed in the exports of linens, accompanied by an increase in those of manufactured fabrics.]

559 BRUENGER, ALBERT, *Joellenbeck, near Bielefeld*
—Manufacturer.

Samples of bleached linen. Raw materials, hand-spun Westphalian flax. Linen, exhibited for fineness, fabric, and durability.

560 DELIUS, JOHN DANIEL, *Bielefeld*—Manufacturer.

Samples of bleached linen and linen kerchiefs, spun by hand and machine.

561 BLANKENBURG, FRIEDRICH, & CO., *Lippstadt*—
Manufacturer.

Samples of twine and cord of various threads.

Raw materials: hemp from the neighbourhood of Lippstadt and Italy. The hemp imported from Italy is softer and of a lighter colour, but not stronger than the German.

562 BOLENIUS & NOLTE, *Bielefeld*—Manufacturers.
(Agents, Richards & Co., 45 Bread Street, City.)

Samples of linen yarn, bleached linen, and bleached linen drill; cambric lawn, bleached and printed; linen pocket handkerchiefs.

563 GANTE, C. F., & SONS, *Bielefeld*—Manufacturers.
Specimens of bleached linen, all home-woven, and made of hand-spun flax.

564 TRAPPMANN & SPITZ, *Barmen*—Manufacturers.

Specimens of stuff buttons. Gimped buttons, manufactured partly of twisted silk and trams, which are received from Italy and the East Indies, and partly of a mixture of silk, wool, and cotton.

565 WÖLFING & WINDRATH, *Elberfeld*—
Manufacturers.

Various sorts of cotton tapes, ribbons, cords, and cotton and worsted laces.

566 ZOLLMANN & STEIGERTHAL, *Leichlingen, near
Opladen*—Manufacturers.

Cotton and half-cotton and woollen goods, including Jacquard and Berlin dresses; the materials of these dresses are wool and English twist.

Jacquard dresses, produced of wool and English twist; the Jacquard Berlin dresses are entirely of cotton.

567 HAARHAUS, J. C., and SONS, *Elberfeld*—
Manufacturers.

Samples of shawls and stuffs for ladies' dresses, of silk, wool, silk and cotton, silk and wool, wool and cotton, and cotton.

568 PLUECKER, MORITZ, M. *Gladbach*—Manufacturer.
Shawls of wool and silk; and of wool and cotton.

569 WEBER & METZGES, *Gladbach*—Manufacturers.

Specimens of pique waistcoating and waistcoating in wool and cotton. Raw materials for pique, from England; the other stuffs consist of fine wool and silk.

570 WEYERBUSCH, C., & CO., *Elberfeld*—
Manufacturers.

An assortment of silk and woollen stuffs for buttons, and covered buttons for various purposes.

571 ENGELMANN, CHR., & SON, *Crefeld*—Manufacturers.

A variety of shawls, and black silk for dresses and parasols.

572 FUNKE, J. H., BOEDDINGHAUS, & CO., *Elberfeld*
—Manufacturers.

Silk and half-silk goods:—Romals à franges. Cravat with brocaded striped tie. Greek slips. Crav. Anglaises. Summer cravats, and other varieties. Taffetas à Co. B. Russes. Gros grains, croisées glacées, damiers glacés. Françaises. Atlas jacquards. Taffetas. Arabie aprons. Shawls:—Satin shawls, Jardinières, damassés noirs, glacés, noirs. Esmeralda. Arabes glacées. Corahs. Fancy waist-coatings. Jet black satin.

573 PFERDMENGENS & KLEINJUNG, *Vierssen*—
Manufacturers.

Stuffs for trousers and waistcoats. Various specimens of fancy cashmeres, dark and light. Satin checks. Plain, striped, and twilled and checked satin. Buckskin, wool and cotton. Stuff for trousers, linen and wool, and wool and cotton.

574 PFERDMENGENS BROTHERS, *Gladbach*—
Manufacturers.

Silk and half-silk and cotton goods. Specimens of casimets, elastiques, satin turk, and figure, Madras uni. Lutestring watered and striped, and gros de Berlin.

575 HEYMANN, CHARLES, and CO., *Crefeld*—
Manufacturers.

An assortment of fancy waistcoatings and fancy silk handkerchiefs and cravats.

576 LANGENBECK & MARTINI, *Elberfeld*—
Manufacturers.

(Agent, W. Meyerstein, 11 Watling Street, City.)

Specimens of buttons and braces of silk and lasting.

577 NEUHAUS, LUDWIG, *Betterath, near Gladbach*
—Manufacturer.

Cotton, and silk and cotton goods. Samples of cotton waistcoatings; dimity; silk; and cotton and silk.

578 KLEIN-SCHLATTER, CHAS. FREDERICK, *Barmen*
—Manufacturer. (Agents in London, Messrs.
F. Huth & Co.)

Cotton, and cotton and wool shawls.

579 LAMBERTS, M. & MAY, M. *Gladbach*—
Manufacturers.

Specimens of cotton beaver and drill; cotton and wool cassinet. Cheap, and adapted for the working classes.

580 RURMANN & MECKEL, *Elberfeld*—
Manufacturers.

Various shawls, waistcoatings, and ladies' dresses; including shawls, cotton; cotton and worsted, silk, worsted, woollen, and cotton and woollen.

Waistcoating of cotton and silk; ladies' dresses of cotton and silk.

CHRISTIAN, Vierssen—Manufacturer.
elvet and half-woollen stripes. Canvas silk and woollen.
carriage covering; horse-hair stuffs for sticcoats.

ENGELMANN, Crefeld—Manufacturers.
Aprons, including satin checked, watered affetas. Aprons, fancy watered, in fine in green, violet, royal blue, brown, dahlia, in various qualities and different sizes.

& BRABANT, Vierssen, near Crefeld—Manufacturers. (Agent in London, Mr. George Swan Chambers, Gresham Street.)
from silk, cotton, and linen, including Turkish poplins, Persian handkerchiefs, d, &c.

J., & Co., Elberfeld—Manufacturers.
and waistcoating. Llama wool shawls. silk and barège; half-woollen cloaking; half woollen, and with silk. The half are made from double warps.
and rose-coloured twist; red water twist. colours and fineness, spun in England, exhibitors.

& HOLTHAUS, Elberfeld—Manufacturers.
t, Messrs. Gebhardt, Rottmann & Co., 29 Street, Cheapside.)
colours, for coverings of tables, coaches, Silk and linen damask.

L, PETER E., Elberfeld—Manufacturer.
mens of silk and cotton neckcloths, ladies' fancy plaids, and waistcoating.

ROBERT, M. Gladbach—Manufacturer.
ts in London, Cooper & Blagg, 44 Friday
)
n and silk, wool, and linen goods used for

ictorias, China crape, and toile du nord, all l.
erchiefs, cotton and silk. Diamond cotton, and linen; Germania and soie, cotton
id wool. China cotton; cotton and wool;
and silk and wool.

, FRIEDRICH, Gladbach—Manufacturer.
d cotton wares, consisting of half-woollen and buckskin, and waistcoat pieces. The hibited for cheapness and design; the heapness and durability.

& Co., Barmen—Manufacturers. (Agents lon, Messrs. Gractzer & Hermann, 9 Huggin Wood Street.)
id silk and wool laces and cords.

BREDT, & Co., Barmen—Manufacturers.
and gambroon buttons and button-stuff. plain and fancy silk buttons; specimens ring buttons.

NEVIANDT, Elberfeld—Manufacturers.
mens of cashmere waistcoating.

592 **GRAFF, PHILIPP, Siegen**—Producer.
Samples of cobalt ore and cobalt blue, from Philipp Hoffnung, near Siegen.

Bright white cobalt (cobalt glance), crystallized in microscopical forms, and diffused in slate, greywacke, quartz. The crystals contain:—

Cobalt	. . .	29.77
Sulphur	. . .	19.10
Arsenic	. . .	44.75
Iron	. . .	6.38

A large number of smalt factories obtain their finest colours from this ore. The first quality produces 29 per cent. of oxide of cobalt, and the second 22.

[The colouring matter of intense blue, used in the arts under the name of smalts, and producing cobalt blue, Thenard's blue, and other pigments, invaluable in all colouring which has to stand the action of fire, is obtained from an impure oxide (*Zaffre*) derived from some ores of cobalt, of which that called tin-white, or grey cobalt, cobalt glance, cobaltine, &c., is the principle. This ore is an arsenio-sulphuret (Co As² + Co S²), and is remarkable for the extremely perfect and beautiful crystals in which it is often found, and which in some respects resemble iron pyrites. The principal localities of the mineral are Tunaberg, in Sweden, and some localities in Germany. It occurs also in Connecticut, North America.—D. T. A.]

593 **SCHULZ, CHARLES, Essen**—Inventor, Manufacturer, and Importer. (Agents in London, Messrs. S. Cahn & Co., 3 Cophthall Chambers, Cophthall Court, City.)

Varnished leather for caps, shoes, and hats.
Walking-sticks and sword-canes of whalebone. Manilla dragon-canes; Malacca canes; and common walking-sticks.

594 **REINEKE, C., Horn, Lippe**—Inventor and Manufacturer.

Side-saddle, with arms, and two elastic stirrups, to allow the rider to move and turn about with ease. An umbrella belonging to it.

595 **KLEMS, JOHANN BERNHARD, Dusseldorf**—Manufacturer. (Agent in London, Mr. Fr. Klein, 38 Finsbury Square.)

A grand piano, after Erard's Paris model; this adaptation of that principle is stated to require less strength in performance, an additional iron spreading bar being placed above the strings in the lower bass, to give a greater counter pressure.

596 **FUDIKAR, HERRMANN, Elberfeld**—Manufacturer.

Horse-hair, with silk and cotton for upholstery.
Divers sorts of horse-hair upholstery.
Coverings of horse-hair, black and white; red; black, with blue silk; side-part hair and red silk; and white and blue.
Chair-cover, white horse-hair with red silk; red and yellow silk.
Velours d'Utrecht; the same, striped.

597 **RUHL, PETER, & SON, Hesse-Cassel**—Manufacturers.

An assortment of pasteboard boxes.
A series of embossed envelopes; a series of printed envelopes.
Patterns of coloured paper.

598 **HODDICK, WILLIAM, Langenberg.**

Specimens of dyed jet-black silk, exhibited for brightness, purity, and colour.

- 599 WESTHOFF BROTHERS, *Dusseldorf*—Manufacturers.
Specimens of printed calicoes. The raw materials are from England; 24 warps and 28 wefts are used; the madders from Holland; exhibited for cheapness and durability.
- 600 WOLFF, JOHANN FRIEDRICH, *Elberfeld*—Manufacturer.
Samples of Turkey-red cotton yarn.
- 601 TROST, C. & F., *Louisenthal, Mülheim on the Ruhr*—Manufacturers.
Specimens of printed calico of various patterns on a red and indigo ground. Manufactured from English yarn, on hand-loom in Westphalia, but printed and finished in Louisenthal. Exhibited for durability and colour.
- 602 TURKEY-RED DYEING COMPANY, *Hagen, near Elberfeld*—Importers and Manufacturers. (Agent in London, Mr. John Henry Cohn, 3 Fenchurch Buildings, Fenchurch Street.)
Various samples of Turkey-red cotton yarns, of different sorts and shades from light to dark.
Printed calicoes in various colours.
Raw materials, as warps and cops for the cottons, chiefly from England.
- 603 NEUHOFF, JOHN HENRY, *Elberfeld*—Dyer.
Turkey-red yarns, including double extra, medium, and mule, best dye twist.
Good water and mule middle pink.
The yarns are spun partly in England and partly in Germany.
- 604 LAMBERTS, ANTONY CHRISTIAN'S SON, *M. Gladbach*—Manufacturers.
Specimens of brown cotton Kalmuck; black, green, buckskin, and mixture, Kalmuck.
Brown, black, and variegated beaver. Pressed beaver.
- 605 LUPP & SONS, *Dusseldorf*—Importers and Manufacturers.
Printed calico and coloured woven calico goods. Indigo dye; calico shot; calico ribs; calico with satin; chequered calico.
Napolitaine, with wool; furniture, cotton, piqué, and dimity; kerchiefs; plaids; printed kerchiefs and slips; printed calicoes.
The raw materials are from England and Germany; the cottons printed by machinery, the other articles are woven and worked by hand.
- 606 BOCKMÜHL BROTHERS, SCHLIEFER & HECKER, *Elberfeld*—Manufacturers.
Patterns of printed calicoes, various colours, including rose, lilac, green, blue, orange, garancine, black, and white.
- 607 BRINCK, J. W., *Gladbach*—Manufacturer.
Coloured cotton yarns. Turkey-red, of various shades. The raw material for spinning from England.
- 608 SCHOELLER, AUG. & FERD., *Elberfeld*—Manufacturers.
Various samples of Turkey-red yarn. Specimen to show the process of dyeing in its various stages.
- 609 CROON BROTHERS, *Gladbach*—Manufacturers.
Specimens of cotton beavers; specimens of printed calmac, beaverteen, cassinet, cotton and wool, and buckskin.
- 610 CRAMER, L. & G., *Dusseldorf*—Manufacturers.
Printed cottons and stuffs.
Gingham and twilled union.
Twilled nankeen.
Furniture stuffs of various colours, including blue, red, lilac, and white.
- 611 SARTORIUS, A., & Co., *Dusseldorf*—Manufacturers.
Samples of rose, fancy-coloured, and Turkey-red yarn, for the Indian market.
- 612 DIECKMANN, W. & C., *Elberfeld*—Manufacturers.
Woven goods:—Portraits of the King and Queen of Prussia, woven in silk, in gilt frames, of various sizes.
Embroidered waistcoats, woven in wool, cotton, and silk; the same, Natal web, in wool, cotton, and silk.
Cashmere and Valencia waistcoats, woven in cotton, wool, and silk.
- 613 RUPS, LOUIS, *Crefeld*—Manufacturer.
Silk hats, with felt shape and form.
- 614 ERBSCHLOE, FREDERIC WILLIAM, & SONS—*Lutringhausen, near Elberfeld*—Manufacturers.
Specimens of refined German steel, of various qualities, and tools. Cards, with fifteen samples of refined German steel files and rasps, planes and chisels, gun spring, bayonet, ramrod, and cut steel.
- 615 POST, JOHN D., *Wehringhausen, near Hagen*—Manufacturer.
Cutlery and hard wares:—Cutlass blades, sword blades and sabres. Table-knives and forks. Scythes. Straw-knives.
Pieces of steel. Hoe. Hatchets and axes. Adze.
Hammers. Chopping-knives. Sickles.
Drawing-knives. Trowels. Braces. Saws.
Anvils for silversmiths. Bench-vices. Scale-beams. Steel-yards. Shop-scales.
Door-locks. Coffee-mills. Gimlets. Chisels. Plane-irons. Files.
Compasses. Pliers and nippers. Hand-vices. Pinners. Stock and dies.
Saw-sets. Turn-screws. Cupboard-locks. Bolts. Sheep-shears.
- 616 POST'S, J. C., SONS, *Eilpe, near Hagen*—Manufacturers.
Specimens of cast scissors.
- 617 MANNESMANN, A., *Remscheid*—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)
Files, screws, and steel. Raw materials:—Prime Siegen rough steel, manufactured in Remscheid.
- 618 PLUEMACHER, W., *Wald, Solingen*—Manufacturer.
A great variety of scissors.
- 619 PICKARDT, G., *Remscheid*—Manufacturer.
A variety of files and rasps, manufactured of cast, refined, and double-refined steel.
- 620 BRAND, P. W., *Remscheid*—Manufacturer.
Specimens of saws. Mill, crane, pit, cross-cut, "dwas," and "paunsch;" pit, Paris form, veneer web; circular, lock, and web; tram Paris form; tenon and American blue-polished quillon, and polish teeth, blue; trunk; wood, Berlin form; butcher; spring and butcher, blue; blade; dark; and lock, with handle.
- 621 BRAUNSCHWEIG, J. A., *Remscheid*—Manufacturer.
Various sorts of carpenters' and coopers' tools, planes, chisels, pickaxes, &c.
- 622 REINSHAGEN, G., *Remscheid*—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)
Various-files of German steel.

623 BLECKMANN, JOHN ELIAS, *Ronsdorf*—
Manufacturer.

Specimens of scissors, shears, files, rasps, vices, hammers, brace-bits, compasses, gimlets, trowels, chisels, gouges, saws, pliers, pincers, &c.

Rim locks, mortice, till, trunk, and padlocks.
Tinmen's tools, various. Skates.

624 THOMAS, CHRISTIAN, *Büchel, near Remscheid*—
Manufacturer.

Augers and hardwares. Square rule.
Various sorts of augers and saddlers' knives.

625 FELDE, RICHARD, *Feld by Remscheid, near Solingen*—Manufacturer.

Specimens of polished steel saws: of unhardened sheet cast; double refined; double refined and hardened; with yellow and blue teeth of double refined; of yellow, double refined; unhardened; blue, hardened, of double refined; hardened, of double refined, with blue teeth; best tempered, and of double sheet; and unhardened, of double refined.

626 ARNS, AUGUST, *Remscheid*—Manufacturer.

Various carpenter's tools, including planes, chisels, &c.

627 ANTE, ANTON, *Zuschen, near Brilon*—
Manufacturer.

Various axes and hatchets. Chaff-cutter.
Raw materials:—Styria steel for chaff-cutters, axes, and hatchets. Cut steel, raised in the county of Siegen, Rhine-Prussia, for grubbing.
Axes, broad axes, &c.

628 CÖPPEL, ALEXANDER, *Solingen*—Manufacturer.

Various specimens of cutlery, including pen, pocket, spring, clasp, and hunting knives.

629 LINDER, BENJAMIN, *Solingen*—Manufacturer.

Assortment of pen and pocket knives.

630 LOHMANN, F., *Witten on Ruhr*—Manufacturer.
(Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Files and cast steel; pig iron, employed in producing steel; pig iron, cast into bars and decarbonised whole and converted into steel; bars of steel; files made of steel to show the quality of the steel; steel recast and made into cast-steel; files made of cast-steel.

In producing this steel, the process of puddling and refining is avoided; the bars are decarbonised whole, without altering the shape; the invention is founded upon the experiments of Réaumur, and called by the inventor "steel adoucé."

631 HILGER & SONS, LUCKHAUS & GUENTHER, P. C. LUCKHAUS & Co., and J. B. HASENKLEVER & SONS, *Remscheid*—Manufacturers.

Carpenters', joiners', coopers', gardeners', and other tools.

Pen, pocket, hunting, and other knives; scissors, shears, scythes, saws, and other cutlery.

A large assortment of hardwares, including coffee mills, sugar-tongs, nut-crackers, scales, screws, bolts, files, piano hooks, tuning hammers and forks, vices, crimping-tongs, pincers, &c.

632 HUTH, FRIED., & Co., *Hagen*—Manufacturers.

Samples of steel, ore, cemented, puddled, refined, and raw iron and cemented steel; samples of specular iron, and hard wares; including cast-steel files, carpenters' tools, various vices, and anvils.

633 BOECKER, R. & H., *Remscheid*—Manufacturers.
(Agent, Oscar Frauenknecht, 80 Bishopsgate Street Within.)

Hardware and cutlery. — Files, rasps, pincers, bits, gimlets, &c. Locks, scale-beams, bolts, and skates; shears,

saws, vices, trowels, screw-drivers, hinges, rings, knobs, &c. Knives, scissors, sugar-tongs, nut-crackers, wire gauges, &c.

Patterns of drawing, chopping and cooper's knives, cleavers, saws, scythes, &c.

[The flourishing state of the German cutlery trade, of which the principal seats are in Westphalia and the Rhenish provinces (as Solingen, Remscheid, and Hagen), is continually enlarging itself. The Zollverein exports yearly immense quantities of this hardware to America, through which it is dispersed from almost all the Transatlantic harbours.]

634 WESCHER BROTHERS, & STRASMANN, *Barmen*—
Manufacturers.

Specimens of horn buttons; sporting and dress buttons. The materials used in the manufacture are the hoofs of oxen.

635 NOTTEBOHM & Co., *Ludenscheid*—Manufacturers.

Samples of cast brass, and German silver door handles, rings, screws, rollers for chairs, bedsteads, and other articles.

636 TURK, C. P. (Widow), *Ludenscheid*—Manufacturer.

Specimens of steel, German silver, plated, and gilt buttons, buckles, and nails, for upholstery.

637 HOELLER, A. & E., *Solingen*—Manufacturers.
(Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Sword of honour, and court-sword, in case. Gloves, swords, and hangers. Mounted foils and rapiers.

Damask blades in the oriental style. Blades of swords, and foils. Matchetts and cutlasses. Lance blades.

Scissors; the same, in case. Pen and pocket knives. Table knives and forks.

Carving knives and forks. Razors. Poniards. Spear-pointed knives. Shoemakers' and butchers' knives. Table-knives.

Sheep and tin shears. Saws and saw-blades. Files. Chisels and plane knives. Stocks and dies. Tongs, nippers, and wire-pliers.

Compasses and dividers. Brace-bits and gimlets. Hammers and jewellers' tools. Hinges. Locks.

Parallel-vice, in case. Halter-chains.
Steel ornaments, for porte-monnaies, porte-cigars, and bags.

638 DREYSE & COLLENBUSCH, *Sömmerda*—
Manufacturers.

Specimens of percussion-caps, in which certainty of ignition is obtained by protecting the priming from wet or moisture.

Tin-plate, barrel, and copper rivets produced by machinery without heat, and exhibited for cheapness.

639 RITZEL, Widow LEONHARD, *Ludenscheid, Westphalia*—Manufacturer.

Various metallic buttons. Copper obtained from England, Sweden, and Germany. Zinc from Rhine provinces and Silesia.

640 SCHWARTE, J. D., *Solingen*—Manufacturer.

An assortment of razors, pen-knives, chatelaine hooks and swivels.

641 DULTGEN BROTHERS, *Dültgenhal, near Wald*—
Manufacturers.

Hard wares. Umbrella and parasol frames, &c. Samples of cigar-boxes, porte-monnaie frames, &c. Pad and portfolio locks, and door-handles.

642 ALTENLOH, BRINK, & Co., *Milspe, near Schwes*—
Manufacturers. (Agent in London, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Various specimens of screws, with row

- 643 SCHLEGELMILCH, CARL, *Suhl*—Manufacturer.
Box for matches, made of rolled sheet-iron, to show the quality, toughness and pliability. The lid opens by pressure along the length.
- 644 SCHMIDT, CASPAR, *Soest*—Manufacturer.
A middle-sized cooking apparatus of plate iron.
- 645 ASBECK, CHARLES, & Co., *Hagen*—Manufacturers.
Vices, anvil, horse-shoes, and hardwares; locksmith's anvil, turning-lathe, parallel vice and table vice, exhibited for cheapness.
Specimens of refined German steel, made of Siegen steel ore.
Horse-shoes of half-hardened steel.
Tools for shoeing horses, consisting of rasps, hammer, and pincer.
Variety of padlocks and fodder knives.
- 646 SCHMIDT, PET. LUDW., *Elberfeld*—Manufacturer.
Steel, iron, and brass wares, including gilt stamped mirror-knobs, escutcheons, and ornamental drawer-rings.
Card counter plates and snuffer-dishes.
Brass knobs, hooks, and drawer-rings. Chair-rollers.
Hand-bells. Dial plates, &c.
Curtain cornices, ornaments, pins, and rings.
Parasol frames. Stamped brass candlesticks.
Steel umbrella and parasol frames, with and without japanned handles. Reels of iron, copper, and brass wire.
- 648 HOESTEREY, G., *Barmen*—Manufacturer.
Samples of buttons, plated with gold, silver, and platina.
- 649 KRUPP, FRIEDRICH, *Essen, near Dusseldorf*—Manufacturer and part Inventor.
Rolling mill for mints. The rollers, 8 inches in length and diameter, are hardened, exhibited for equal hardening, purity, and durability.
Carriage and buffer springs. Railway-carriage axles.
Forged cast-steel containing a small quantity of carbon; exhibited for purity and toughness. Used for axletrees for locomotives, waggons, &c.; gun and carriage, cast-steel cuirass, breast-plates.
- 650 LUCAS, F. W., & Co., *Elberfeld*—Manufacturers.
An assortment of hardware, consisting of imitation bronze goods in lead, tin, and zinc; altar and other candlesticks, inkstands, match-boxes, lamp-screens, thermometer, paper-weights, lamp-stands, tobacco-boxes, flower-pot stands, and a statue of Gutenberg.
- 651 SCHMIDT, JOHANN DANIEL, jun., *Sprockhövel*—Manufacturer.
Hardwares, including iron and brass drawer, chest and desk-locks; mortice-locks for work-tables and pianos; burnished steel portfolio, and various locks in iron and brass.
Window-bolts, with appurtenances; bolts and snaps in iron, brass, &c.
Iron and brass hinges, for tables, desks, &c.
Braces, with an assortment of bits. Hollow hand-pad, with tools. Cogwheel braces. Augers, bits, and centre-bits. Gimlets, ordinary and twisted.
Compasses and callipers for carpenters, turners, &c.
Pliers, punches, and nippers. Hand-shears, and wire-drawing pincers; carpenters' and other pincers. Sugar-tongs, curling-tongs, nut-crackers, &c. Fox-traps.
Hand and bench vices. Universal screw-wrenches.
Wooden and iron screw stocks. Scales and steelyards. Skates of various qualities.
- 652 FUNKE & HUCK, *Hagen*—Manufacturers.
Samples of hardwares, including screws; with points; and with nuts. Patent and common vice; nut-wrench.
- 653 GREEFF, J. P. G. W., & SON, *Barmen*—Manufacturers.
Various metal buttons and boxes.
Samples of snuff-boxes.
- 654 WOESTE, GUSTAV, & Co., *Solingen*—Manufacturers.
(Agent in London, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)
Cards of cast scissors; various specimens of different qualities, plain and ornamented. Samples of shears.
- 655 CARON, J. M., & Co., *Raenthal, near Barmen*—Manufacturers.
An assortment of gilt buttons and jewellery, consisting of brooches, rings, crosses, chains, breast-pins, ear-rings, buckles, &c. The materials employed in the manufacture are British, Russian, and Swedish copper and Bohemian glass-stones. The soldering is done by means of a hydro-oxygen apparatus.
- 656 WOLFF & ERBSLOEH, *Barmen*—Manufacturers.
(Agents in London, Messrs. E. & H. Blank, 10 Trump Street, King Street.)
Various plated articles: raw materials, gold, platina, silver, and copper. The articles are principally manufactured by machinery.
- 657 SEEL, GUST, *Elberfeld*—Manufacturer.
Sundry ornamental articles in hair:—The mourning Jews, after Bendemann. Landscapes: Ruins of a Convent; Forest Country. Wreath of flowers; bouquets of flowers.
Various designs in hair for brooches, earrings, and rings, with finished gold brooch. Album, with a landscape; album, with bouquet. Box, with braids of hair.
- 658 LIPP (VON), FREDRICH, *Dusseldorf*—Manufacturer.
Perfumery: Düsseldorf water; and oriental pastil.
Specimens of paper-hangings in rolls.
- 659 HILGERS, CARL, *Dusseldorf*—Inventor and Manufacturer.
Lady's writing and work tables, in ebony, with four views of the Rhine.
- 660 EICHELBERG, J. D., & Co., *Iserlohn*—Manufacturers.
Window-curtain, with a frame of brass fixed on wood.
- 661 BIEFANG, CHRISTIAN, *Duisburg*—Manufacturer.
Paste and pasteboard articles.
Various frames for daguerreotypes and pictures, in velvet, bronze, and marble: one étau.
Lithographs in plain colours.
- 662 HOELTRING & HOFFEKEN, *Barmen*—Manufacturers.
An assortment of India-rubber braces.
[The caoutchouc employed for weaving braces, elastic braids, and webs, is cut spirally from bottle India-rubber, by means of a small rotating knife kept wet by a water-drip. The workman takes half a bottle in his hand, and obtains very long threads by turning it round between his fingers and pressing it to the knife: these threads are afterwards readily joined, by cutting a short piece from each end, and merely placing the freshly-cut surfaces together. The threads are now wound spirally on reels, and stretched considerably in the operation. By leaving them in a state of tension for some weeks, they lose their elasticity, and may be easily woven and made into braids.]

re to steam, the elasticity is, however, perfectly and the fabric becomes shortened.—W. D. L. R.]

KELLER, WEBER, & WITTICH, Hesse-Cassel, Hesse.

's toys—Guns, pistols, cross-bows, furniture, lotteries, counters, several sorts of carriages, with metal barrels, and sheep.

KEE & FISCHER, Lüdenschoid, Westphalia—Manufacturers.

snuff-boxes, match-boxes, buckles, and lids for keys in German silver, pinchbeck, and Britannia buttons, silvered.
of escutcheons and rings in German silver.
of brass and metal, by machinery from one

KILLIAN, HENRY, Siegen—Producer.
representing "The Lord's Supper," after that of Leonardo da Vinci.

FELTHAUS, —, Wetzlar—Producer.
its of ore from the lately-opened and promising and quicksilver mine of Ludwig, near Wetzlar, and of the cinnabar procured from the ore.

KIFFERS & AX, Rheydt—Manufacturers.
and cotton and wool, mixed. Buckskins.

SCHKEEL, C., Cassel—Manufacturer.
of pianoforte of seven octaves, on Erard's prin-

DENMANN, J. Gladbach—Manufacturer.
of linen damask table-cloths, bearing the Royal coat of arms of Prussia.
of linen damask, with various private coats of arms.
of table-cloth, and other coverings, with sacred subjects.
of buckskins, towels, and dessert napkins of linen

670 **BRITHAUF, F. W., & SON, Cassel—Manufacturers.**

An assortment of physical and mathematical instruments of various descriptions, including theodolites, compasses, sextants, levelling instruments, &c.

671 **VOGEL, F. W., Jena, Saxe Weimar—Bookbinder.**
A highly-finished copy of F. von Schiller's works, under glass cover and on a small table.

672 **MECKLINGHAUS & WEX, Barmen—Manufacturers.**
An assortment of dressed hides for harness, &c.

673 **SCHMOLZ, WILLIAM, & CO., Solingen and Berlin—Manufacturers of German Silver Wares, &c.**
(Agents in London, Bier Brothers, 2 St. Mary-at-Hill, City.)
An assortment of cutlery, including swords, sabres, and hunting knives, polished blades and mounted in steel, brass, pinchbeck, German silver, &c. Table knives, scissors and penknives. Specimens of nickel and German silver in sheets and in wire.

674 **TACK, WM., & PELIZAEUS, Crefeld—Manufacturers.**
Silk, and silk and cotton mixed stuffs, for waistcoats.

675 **SCHULTE, J. H., Barmen—Manufacturer.**
Silk, and silk and cotton mixed stuffs, for waistcoats.

676 **SIEPERMANN & MOEHLAU, Derendorf, near Düsseldorf—Manufacturers.**
Printed cotton stuff for furniture.

677 **KRUPP, F., Essen, near the Ruhr—Inventor and Manufacturer.**
Steel gun, 6-pounder, complete. Steel cuirass, and one tried by being fired at with six different bullets. Steel rollers, springs, and railway axle.

678 **TRUTENBERG, LUDWIG, Hüsten, Kreis Arnberg—Inventor and Manufacturer.**
Rifle with seven barrels, which can all be fired and loaded at once, particularly applicable for shooting wild fowl, &c.

PRUSSIA.—SAXON GRAND DUCHY AND DUCHIES.—BRUNSWICK, ANHALT, AND THURINGIAN PRINCIPALITIES.

FRITZSCHE, J. C., Thale, near Quedlinburg—Producer.
ironstone, from the mines of Hoffnung and Heiligensberg. Brown iron ore, from the mine of Heiligensberg. Furnace slags, iron in bars, &c. Various utensils of pate iron, worked in one piece.

FRITZSCHE, EDUARD, Breitenbach—Manufacturer.
of porcelain, in gold frame, representing Jubal, and of music.
of porcelain plate, representing a picture, after the portrait, in a costume of the time of Louis XVI.

SALINE WORKS at Artern—Manufacturer.
common salt, and mother-ley and rock salt.

SALINE WORKS at MAGDEBURG, near Harzgerode, Anhalt—Bernburg.
of a wind instrument constructed by Lüders. Iron, raw and roasted, with magnetic ironstone from the mines at Neudorf. White pig iron. of the high-furnace, with crystals.

Axletree, puddled, and re-heated by gas. Waggon-boxes, and a sample of iron. Model of a gas-furnace, constructed by Bischof.

Fluor-spar. Artificial lead-glance crystals. Crude antimony, three varieties. Litharge or protoxide of lead. Pure hardened lead, for bearings, types, &c. Mixed vitriol.

The sparry iron ore is used for the manufacture of pig iron, and changes in roasting into magnetic ironstone, discernible by the crystals. The manufacture of iron into bars, by means of gas, is but in its infancy; but the iron produced in this manner is considered to be preferable to that produced by means of charcoal, and to the puddled iron in bars made by pit-coal.

[The lignites of Germany have not been found favourable to the production of good iron; the principle has, therefore, been introduced of distilling the fuel in close vessels, and using the resulting gases in a state of combustion in the furnace as the source of heat to melt the iron. The results, as far as the experiment has yet been tried, are very satisfactory, and the use of gases there is rapidly extending in the iron districts of the Continent. The res-

values of the iron-producing States of Europe may be inferred from the following return obtained in 1845 :—

	Tons.
Great Britain	2,000,000
United States	502,000
France	448,000
Russia	400,000
Prussian Zollverein	300,000
Austria	190,000
Belgium	150,000
Sweden	145,000
All the other European states	76,000

R. H.]

683 HERMANN, O., Proprietor of the Chemical Manufactory (formerly Royal) at *Schönebeck*.

Chemical preparations and specimens of common salt. White oxide of zinc, prepared in the dry way. Iron alum. Red prussiate of potash of Gmelin. Pure gallic acid. Crystallized tartrate of potash. Hyposulphate of soda. Chlorate of potassium. Cyanide of potassium. Pure carbonate of potash. Dry nitrate of strontian. Crystallized nitrate of barytes. Glacial phosphoric acid. Potassium, 3 lbs. net, in petroleum. Iodine, 3 lbs. net, in petroleum. Chloroform. Bromine, 1 lb. net, in water. Sulphuret of carbon, 1½ lbs net, in water. Chloride of tin. Pure oxide of copper. Precipitated nitrate of bismuth. Pure succinic acid. Caustic potash, in sticks. Metallic cadmium. Binioidide of mercury.

684 WEISS, JULIUS HEINRICH, *Mühlhausen*—Manufacturer.

Produce of plants :—Madder lac-colours, for artistic painting. Madder covering-colours. Patterns coloured with the dyes.

685 BEHM, F., *Hoym, near Ballenstedt, Anhalt, Bernburg*—Manufacturer.

Sugar from red beet. From one acre of ground there are obtained 120 cwt. of red beet, equal to 5½ cwt. of raw sugar.

[This sugar is extracted from the common red beet-root (*Beta vulgaris*). It is largely consumed in Germany and in France, both directly as sugar, and indirectly for the purposes of distillation. After the sugar is extracted, the residuum, pressed into cakes, forms a very nutritive food for cattle. It is manufactured to a small extent in England, but cannot compete in price with the colonial cane-sugars. Our climate is ill-suited to the growth of this variety of beet, and a fiscal duty of nearly 15s. per cwt. operates against its manufacture. The average production of sugar is about 5 per cent. on the weight of the raw material.—J. W.]

686 BLEIBTREU, LUDWIG OTTO, *Brunswick*—Manufacturer.

Chicory-root, kiln-dried, in slices; roasted, and ground to powder. Prepared chicory-coffee.

[Chicory (*Cichorium intybus*) is extensively used for the purpose of adulterating coffee. When properly prepared, it yields a large proportion of a dark-coloured extractive matter, similar in appearance to coffee, but entirely destitute of the aromatic flavour peculiar to the latter.]

687 BRUMME, A. F. W., & Co., *Waldau, Bernburg, Anhalt*—Manufacturers.

Samples of sugar, manufactured from red beet-root.

688 FEIGENSPAN, ADOLPH, *Mühlhausen*—Manufacturer.

Samples of glue.

689 HABERLAND, WILHELM, *Schoeningen, Brunswick*—Manufacturer.

Samples of dried fruit. Peeled apples, pears, plums without stones, melons, cherries, &c.

690 HALLER, JOSEPH & CHRISTOPHER, *Halle*—Manufacturers.

Specimens of wheat starch, for various purposes. Produced by machinery, and by chemical processes; 100 lbs. of wheat yielding 50 lbs. of starch.

691 HENNIGE & WIESE, *Magdeburg*—Manufacturers. (Agent in London, Mr. John Horstmann, 26 Finsbury Square.)

Sugar, made from red beet-root, and with the centrifugal machine. Loaves of sugar (purified). Refined beet sugar.

692 SALOMON, J. A., & Co., *Brunswick*—Manufacturers.

Dried chicory-root; the same, powdered. Chicory-coffee.

693 TEICHMANN, CESAR, *Erfurt*—Manufacturer.

Samples of succory and powder. Vermicelli, maccaroni, wheat-grits, pearl-barley, mustard, and blacking.

694 THE LOBURG MANUFACTORY, *Jerichow, Magdeburg*—Manufacturer.

Brown and white sago; grape sugar; potato flour and starch; pearl barley; artificial gum in cake and powdered; white and brown treacle; white sago-grits; dry burnt starch, in three qualities, for factories; pipe starch; ringed and powdered starch, made of wheat of the first quality.

[Sago, as it is imported into Europe, is in little hard grains, and is a species of starch in an impure form; it is obtained from the pith of an East Indian palm (the *Sagum farinifera*), which attains a height of thirty feet. Of late the fecula has been obtained from the crude sago in a much purer form, and is then sold under the name of sago-starch; it is much used as a stiffener in dressing calico, &c.]

Grape sugar (glucose, sugar of starch, sugar of fruits, diabetic sugar) is, like cane sugar, a compound of carbon, hydrogen, and oxygen, but differs from the latter in containing a greater proportion of hydrogen and oxygen. The grape and many other fruits, together with honey, owe their sweetness to this substance. Dilute acids convert cane sugar, sugar of milk, starch, and woody fibre (rags or paper for instance), into grape sugar.

Potato starch is one of the purest forms of starch; it consists of small egg-shaped grains, which are composed of several concentric membranes. Starch is coloured blue by iodine and orange by bromine. Added to water at 140° Fahr., the outer envelope of the starch bursts and a jelly is formed. By the action of boiling dilute acids, or of an infusion of malt (which contains a peculiar substance called diastase) kept for some time at a temperature of 150°, starch is converted first into dextrine, having the same composition as starch, and by the continual action lastly into grape sugar. Dry starch, heated to a temperature between 212° and 250°, is likewise converted into a sort of dextrine. Artificial gum, British gum, &c., are commercial names for different preparations of dextrine, which is much used as a stiffener, and a vehicle for the dyes of the calico printer. Starch is a compound of carbon, hydrogen, and oxygen.—W. D. L. R.]

695 WITTEKOP & Co., *Brunswick*—Manufacturers.

Samples of flour, groats, macaroni, and chocolate. The manufacture of macaroni and vermicelli is carried on in two establishments: in the one the kneading and pressing of the dough is done by hand, in the other by steam.

696 GIESSLER, NICHOLAS HENRY, *Trüchtelborn*—Manufacturer.

Balls of woad, prepared from pure woad leaves.

[Woad is a plant of the cruciferous or colewort order. It is the *Isatis tinctoria*, of botanists. The expressed juice of the leaves affords a blue dye. The Picts and ancient Britons painted their bodies with woad.—E. F.]

697 HUCKE, CARL, Manager and Teacher of the School of Agriculture, at *Alach, near Erfurt*.

Samples of hogs' bristles, taken from animals of different races.

Canary and coriander seeds.

698 ANSCHUTZ, ROBERT, *Zella (St. Marii), Duchy of Gotha*—Manufacturer.

Double gun-barrels of common wire-damask; of common flower damask; of fine Paris damask; of fine flower (Turkish) damask; and of fine chain damask.

Rifle barrels of fine flower (Turkish) damask; of Laminette damask; of Gotha damask; of fine steel-wire damask; and of iron damask.

The iron for the steel is made in Zella of sparry ironstone, obtained in the district of Schmalkalden.

[The true damask, or Damascus, work on steel, is the result of welding iron and steel in alternate bands together; then twisting the bar in various ways, by which the variations of the pattern on the polished gun-barrel or sword-blade is produced. In some cases, the steel has iron wire beaten into it, at a welding temperature. An artificial damask is very often produced by the action of acids on the surface; but the pattern thus produced can be readily obliterated, which is not the case with that on the real Damascus work.—R. H.]

699 BRECHT, AUGUST, *Weimar*—Manufacturer.
(Agent in London, Consul S. Collmann.)

Double rifle, with fine damascene barrels, walnut-tree stock.

Single rifle, with damask barrel, and highly-finished nut-tree stock, arranged for pointed and round balls.

The iron employed is from Thuringia; the barrels are from Liege; and the stocks of the wood of native nut-trees.

700 HANAU, WILHELM, *Gera, Reuss*—Manufacturer.

Pair of pistols for round and pointed balls, with the necessary apparatus, in a case.

701 KÖNIG, C. G., & SONS, Gunmakers to H.R.H. the Duke of Saxe-Coburg Gotha, *Duchy of Sachsen Coburg*—Manufacturers. (Agent, Joseph Kendall, 8 Harp Lane, Tower St.)

Pair of octagon pistols; barrels and shaft inlaid with gold and silver, in the Gothic style, the stocks of elm (*Ulmus campestris*), inlaid with silver, with complete apparatus and case.

702 SAUERBREY, LUDWIG, *Zella, Duchy of Gotha*—Manufacturer.

Double rifle, of cast steel, with apparatus of 13 pieces in a box, made of one piece of cast steel, and not soldered together. Both barrels are bored in a converging direction, to one aim, in such a manner as to direct the balls to the same mark. It carries pointed and also round balls.

Double rifle of damask, of cast steel, with Liege barrels, and apparatus for pointed and round balls.

Double gun of damask, with Liege barrels, with apparatus of 7 pieces, in box, for all descriptions of balls and shot.

704 AUSFELD, H., *Gotha, Duchy of Saxe Gotha*—Manufacturer.

Planimeter, an instrument invented by Dr. Flaussen, of the Observatory at Seeburg, for the purpose of measuring surfaces.

[Planimetry, or the art of measuring planes or surfaces, is performed by determining how many squares, whose sides are certain measures of length, are contained therein, so that the area or contents of any surface is known when we know how many square inches, feet, &c., it contains. The instrument above is exhibited for this purpose.—J. G.]

Microscope, the lenses of which are arranged in such a manner that, at their greatest distance from the object-glass, a magnified and well-defined picture is said to be obtained. The magnifying powers vary from 18 to 150 (linear).

705 BROEMEL, AUGUST, *Arnstadt, Principality of Schwarzburg, Sonderhausen*—Manufacturer.

Decimal balance, to weigh from 10 to 15 cwts; another in brass, to weigh 1 cwt., adapted for bankers. The iron and wood are from the Thuringian forest.

706 NIETZSCHMANN & VACCANI, *Halle*—Manufacturers.

Drawing cases and mathematical instruments in brass and new silver. Sets of compasses, polished and unpolished.

707 SCHULTZE, JOHAN & FRIEDRICH, *Paulinzelle, Principality of Rudolstadt, Schwarzburg*—Manufacturers.

An organ; its peculiarities consisting in great power of tone and simplicity of mechanism, with a contrivance for producing deeper tones, and an arrangement for "accelerating the transmission of sound."

708 WAGNER & Co., *Gera, Reuss*—Manufacturers.

(Agents, Messrs. Elemenhorst Brothers, London.) Accordions, inlaid with fine metal and mother-of-pearl. Glazed cupboard.

709 ZEITZER, F., & WINKELMANN, T. CH., *Brunswick*—Manufacturers.

A pianoforte, and a grand pianoforte.

710 DANNEBERG & SON, *Eilenburg*—Manufacturers.

White and coloured furniture stuffs. Jaconets. Millefleurs—pink, lilac, blue, ultramarine. Calicoes—millefleurs, light ground, pink, violet green, and madder.

711 VOGEL & CARNER, *Gera, Reuss*—Manufacturers.

Coloured and woven cotton goods; goods figured, coloured, and woven in the Jacquard loom, made of German and English cotton yarn. These goods are chiefly in demand in European Turkey and in Persia, where they are used, partly for garments, and partly for ornamenting rooms.

712 HAGENBUSCH, C. G., *Weimar*—Manufacturer.

(Agent in London, the Consul S. Collmann.)

Four-fold worsted yarns.

Raw yarns, zephyr and castor.

Dyed yarns, zephyr and castor. Manufactured at the worsted yarn works at Weimar, partly from Silesian and West Prussian and partly from Saxon wools. The coloured yarns were dyed at the manufactory of Messrs. Schuster Brothers, of Berlin.

760 BAUM, EDWARD, *Coburg*—Manufacturer.

Stove of polished iron plate, in the form of a "Knight in full armour," with a base of cast-iron.

This stove is represented in the adjoining column.

761 BEYER & HEINZE, at *Dobra, near Liebenwerda*—Manufacturers.

Parqueterie squares for floors, exhibited for workmanship.

762 EINSIEDEL, Count G., *Iron Works, Lauchhammer*—Manufacturer.

Cast-iron goods:—Stoves, enamelled kettles, pots, milk-cans, horse-manger, &c.

Ornamental bronze casts:—Water-drawer. Bust of the Prince of Prussia. Polar bears, monkeys, tigers, &c.

Nos. 21, 22, 23, and 24, 25, 26, were modelled by the same artist in the years 1849 and 1850, all from living originals, and all in the London Zoological Gardens except the last.

763 FLEISCHMANN, A., *Sonneberg, Saxe Meiningen*—Manufacturer. (Agent, Mr. Joseph Kendall, 8 Harp Lane, Great Tower Street, London.)

An étagère, with side pieces; tables, with stands of vines, which form an arbour; the branches supporting two strong glass plates, forming a chiffonnière. Drawings of other articles of furniture. These articles are termed by the exhibitor "Paxton furniture," and are chiefly composed of iron and glass. (Provisionally registered.)

Looking-glass frame, with glass.

Madonna and bracket, bronzed.

Knights various, bronzed.

Bronzed and gilt brackets, in the Roman, Greek, Byzantine, Gothic, and renaissance styles, &c., bronzed and wood-coloured.

Mazeppa and horse, bronzed. Dog, bronzed.

Candle-screen, wood-coloured.

Pair of architectural ornaments in the renaissance style.

An assortment of animals, in wood colour.

Daguerreotype frames.

Assortment of medallions, in horn frames.

Various serpentine stone mug and cups, boxes, cross, and goblet, with medallions.

A lustre, composed of papier maché, representing Jullien's comic concert, with 20 musicians, modelled by Sachsenwager. (Provisionally registered.)

764 MEYER & WRIED, Successors to STOBWASSER, *Brunswick*—Manufacturer.

Japaned tea-trays, with pictures. "The Summer's Evening," after Nickoll. "The Tinker," after Mieris.

Varnished paintings, with gilt frames. "Children," after Füger. "The Blind Fiddler," after Wilkie. "A Rural Stable," after Pfeiffer.

765 PIEGLER, G., *Schleiz*—Manufacturer.

Night-clocks. Dressing-glasses. Lamp. Candle-screen. Table-candlesticks; screen-candlesticks. Candle-screens.

Plated tinder-boxes. Match-boxes. Fumigating machines.

"Travelling-candlesticks. Staller-lamps." Bottle-corks. Boot-jacks. Tinder-boxes, German silver.

766 STÜBGEN & KLEEMANN, *Erfurt*—Manufacturers.

Brass sliding, or staff lamp.

767 WALLACK, AUGUST, *Weimar*—Manufacturer.

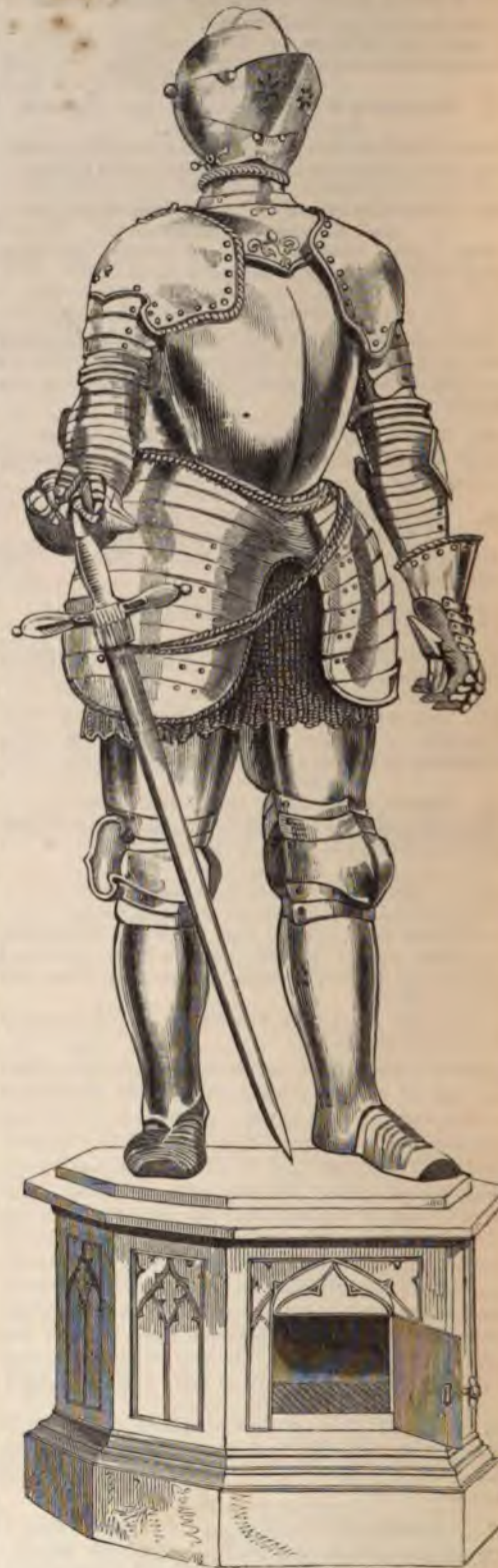
(Agent in London, — Collmann.)

Bronze jewel-box in the Byzantine style, partly gilt and partly silvered.

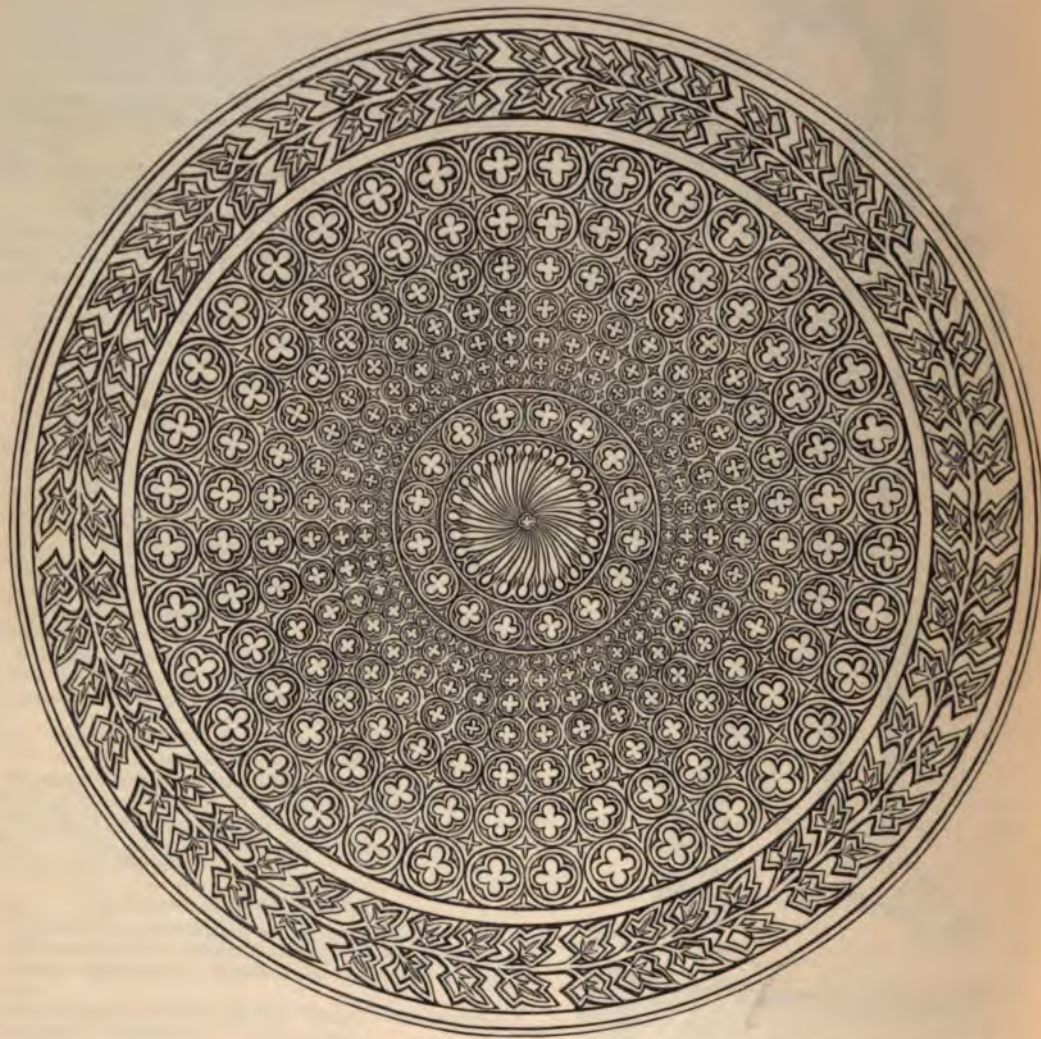
768 RÖEHRIG, CARL, *Braunlage, Brunswick*—Manufacturer. (Agents in London, Messrs. A. & P. Joseph Meyers & Co., 144 Leadenhall Street.)

Specimens of glass cylinders.

Plate glass; plate glass, with paintings.



Baum's Stove of Polished Iron.



152. A GARDEN TABLE TOP, IN BRONZE. COUNT STOLBERG-WERNIGERODE. ILSENBURG FOUNDRY, ZOLLVEREIN.

Double beaver's-tail tiles and gutter-tiles of glass.
Bowed plate glass.

The glass cylinders exhibit the plate-glass in its half-finished state, before opening out, and are only exhibited to show the size and purity of the plate-glass. The materials for the manufacture, consisting of white sand, quartz, and chalk, are found in the neighbourhood.

769 BOLM, CARL, *Brunswick*—Manufacturer.

Tea-kettle, tea-pot, and milk-jug, of brass, manufactured and ornamented by hand.

770 HAGEN, (VON), A., *Erfurt*—Manufacturer.

Writing chiffonnière, of walnut-tree wood, in the renaissance style. The carving-work is neither japanned nor varnished. The interior arrangement is in metal marqueterie-work and carving, with secret drawers, and plan of the same. The marqueterie-work is of silver, copper, brass, ivory, and mother-of-pearl. The slab is formed of different sorts of wood; and, by touching its lock, a receptacle for paper is opened.

771 HEINRICH, G., *Zerbst*—Manufacturer.

Looking-glass; the frame of carton-pierre, with gilding and ivory medallions.

772 HENNEBERG, F. E., & Co., *Gotha*—Manufacturers.

A lady's work-table, inlaid with porcelain plates and fine painting. The carpenter's work and carving sketched by Mr. Anthor.

A fruit-basket on a pillar, with gold ornaments on blue ground, varnished.

A tea-tray, with a group, "The Fisherman's Family," after Riedel.

A porcelain plate, in gold frame, with a view of "The Weather-horn in Switzerland."

Two vases, with embossed flower ornaments, decorated with views of Coburg and Gotha.

A statuette in biscuit.

A goblet, with filigree ornaments, and gold and coloured decoration.

A tea-service, white and gilt, consisting of tray, jug, tea-pot, slop-basin, cream-jug, sugar-bowl, cups, and saucers.

White cups and saucers, in various shapes.

The materials used in the manufacture of the porcelain are all the produce of the country.

773 HOFFMEISTER, THOMAS, & BEHRENS, T., *Coburg*—Manufacturers. (Agent, Joseph Kendall, 8 Harp Lane, Great Tower Street, London.)

Oak sideboard, decorated with carved work, in the true German-Gothic style of the middle age, and ornamented with brown plush.

Four carved oak Gothic arm-chairs, of the same work and style.

774 HUPFER & WOLFERMANN, *Schmölln, Saxe Altenburg*—Manufacturers.

A variety of fancy and ornamental snuff-boxes, &c., in papier maché, tortoiseshell, &c.

775 PUFF, WILHELM, *Coburg*—Manufacturer. (Agent, Joseph Kendall, 8 Harp Lane, Great Tower Street, London.)

Table in the old German style, with inlaid work, in the natural colours of the wood.

776 SCHARF, CHRISTIAN, *Anhalt, Bernburg*—Manufacturer.

Draught-board ornamented, and manufactured of mahogany, chestnut, maple, rosewood, zebra, and pine woods.

777 SCHRADER, C., *Anhalt, Bernburg*—Manufacturer.

Ornamental draught-board, consisting of plum-tree, kingswood, rosewood, chestnut, melon, mahogany, and maple-wood.

778 ARNOLDI, C. E. & F., *Elgersburg, Duchy of Coburg, Gotha*—Manufacturers.

Pharmaceutical instruments, crucibles, measures, funnels, water-pipes, mortars, retorts, filters, evaporating dishes and basins, &c., made of earthen and clay found in the Thuringian forest.

779 STOLBERG AND WERNINGERODE, Earl of, *Ilseburg Foundry*.

1. A Gothic vase, intended for water to play from the opening in the centre of the basin, and showing an attempt to produce a vase in the Gothic style. Remarkable for the superiority of the figured castings, the bronze painting, and the cheapness of the finished article.

This vase is represented in the annexed cut:—



Earl of Stolberg's Gothic Vase.

2. A window-frame, remarkable for its large size, and the perfection of the casting; the difficulty being to prevent its breaking, from contraction in cooling.

3. A garden-table, with Gothic figured board and stand. The board cast of one piece.

This table is represented in the Plate 152.

4. A marble table, with cast-iron stand: a specimen of the quality of the marble from the mines in the neighbourhood of Ilseburg.

5. A Corinthian and a Gothic stove: as samples of the perfection of the castings, the style and cheapness of the finished article.

6. Stags and beams: as samples of a casting from a real stag's head, for model.

7. Two deer-heads: also cast from real heads.

8. Several articles of art and ingenuity, including a lady's fan made of cast-iron, to show the sharpness of the casting, the art of tempering and gilding the same. A work and a fruit basket: exhibited for the beauty of the castings. A horned beetle, and salamander letter-presses: castings from the insect, for model. A wild boar: sample of good casting, modelled from nature.

780 THE DUCAL FOUNDRY INSPECTION, *Rübeland, Brunswick*—Manufacturers.

Marble slabs, made of the marble found near Rübeland, principally black, gray, and red. It is obtained in blocks of nine feet in length, and five feet in breadth.

Two cast-iron stereotype plates, and a Bible printed from the same.

[The slabs of marble here exhibited are of excellent quality and considerable size. They are from quarries of great extent, and the obtaining and polishing the marble is a source of occupation to a large population in part of the duchy of Brunswick.—D. T. A.]

781 ROEMPLER, J. S., *Erfurt*—Manufacturer.
India-rubber elastic braces and watch-guards.

Silk and half-silk shoe stuffs, mixed with India-rubber; shoes made of the same material. The materials employed are caoutchouc, with cotton and silk from Italy and England. Exhibited for superior quality, cheapness, and new design.

782 WALTER, ERNST, & SON, *Brunswick*—Manufacturers.

Two easy chairs, and paper-basket, in basket-work, varnished.

783 SCHREIBER, J. C. G., *Merseburg*—Manufacturer.

A large superfine dressing-case, inlaid with silver. A variety of dressing-cases. Oval, round, seed, and sundry boxes. Visiting-cards. Albums, &c.

784 ZIEGLER BROTHERS, *Ruhla*—Manufacturers.
(Agent in London, Mr. C. Holland, 41 Finsbury Circus.)

Tobacco pipes and bowls. Real meerschaum bowls, carved and plain; imitation meerschaum bowls.

Wood and clay pipes and bowls, and china pipes.

Real meerschaum bowls, coloured by being boiled in oil.

785 BOESCHE, C. J., *Magdeburg*—Producer.

Models. The cathedral at Magdeburg, with all the exterior and interior ornaments, made of limetree-wood, including the tomb of Bishop Ernest. The roof of the Cathedral.

The beautiful fountain at Nürnberg, by Schönhofer. Original model of a spring.

786 JACOB, HEINRICH, *Schmölln, Duchy of Saxe Altenburg*. (Agent in London, Mr. Theodor Winckler, 16 Sidney Street, Commercial Road, East.)

An oil-painting on iron plate, fire-japaned and varnished, representing "Idyl," painted after Nicholas Berchem; another, representing "St. Magdalen," painted after Maes.

787 JACOBY, F. A., *Brunswick*—Modeller. (Agents in London, Messrs. Jonas, Simonson, & Co.)

Silver hunting-cup, with embossed and chased work. Lion's head (marble-plaster). A cast-iron horse, in a leaping attitude, as a head-piece to a clock. Cast-iron horse.

788 STOCKMAN, W., & Co., *Brunswick*—Manufacturers.

Varnished paintings on tin-plates, in gilt frames.—"The Education of Mary," after Rubens. "Madonna, called La Perla," after Raphael. "The Virgin of Madrid," after Murillo. "The Messenger," after Kalisch. "Nerila," after André.

789 TRÜMPLEMAN, AUGUST, *Ilseburgh*—Modeller.
Pictures and transparencies.

790 VEREIN, LANDWIRTSCHAFTLICHER, *Sangerhausen*—Producer.

Samples of seed and hemp.

791 ZIRKENBACH, *Raguhn, Duchy of Anhalt Dessau*—Manufacturer.

Specimens of woollen cloth.

792 HAUCH, A., *Halle on the Saale*—Manufacturer.
Specimens of sundry articles manufactured from hemp, consisting of pouches, bell-pulls, saddle-girths, &c.

793 BAUCH, F. T., *Greiz, Reuss*—Manufacturer.
(Agents in London, Messrs. H. Oppenheim & Co., 15 Addle Street, City.)

Various pieces of Thibet, green and drab; cashmere, nacarra; satin, nacarra; mousseline-de-laine shawls.

794 KAUSCHE, G., *Brunswick*—Inventor and Manufacturer.

Sundry fancy articles, embroidered with gold, silk embroidery, silver, pearls, &c.

795 KUEHNEMUND, J. G., *Ronneburg*—Manufacturer.
An improved harrow.

796 LUX BROTHERS, *Ruhla, Saxe Gotha*—Manufacturers.

A large assortment of meerschaum and other pipes.

797 WEIMAR'S SON, *Jena*—Manufacturer.

Four pieces of élastique for overcoats, made from raw Thuringian wool.

798 HARRASS, P., *Suhl*—Manufacturer.

Sundry articles made of wood.

799 BURBACH BROTHERS, & Co., *Hoerselgau, near Gotha*—Manufacturers. (Agent in London, T. Peterson, Water Lane.)

Two pieces of woven fire-engine hose, made from German and Italian hemp.

800 SELENKA, J., *Brunswick*—Inventor and Manufacturer.

Gilt and fancy leather and paper articles, portfolio.

801 BLANCKE, E., *Naumburg*—Manufacturer.

Double-barrelled gun; joint bullet rifle, with all appurtenances.

802 SOMMERMEYER & Co., *Magdeburg*—Inventors and Manufacturers.

Iron fire-proof safe, with double doors, of a novel construction.

803 GRAFF, W., *Münchenhoff*—Producer.

Stuffed sheep. Fleece of wool.

804 ASSOCIATION OF MANUFACTURERS at *Sonnenberg, Duchy of Saxe Coburg and Gotha*.

Tableau of plastic work representing a rural fête, held at Castle Florence, the country palace of the Duke of Saxe-Coburg Gotha, the residence of H.M. the Queen when on a visit to the Duke, and the place where H.R.H. Prince Albert was born. This tableau contains about 400 moving figures, bands of music, &c.

805 HUTSCHENREUTHER'S, F. A., & SONS, *Wallendorff*—Manufacturers.

Specimens of glass, consisting of a lustre, sailing-vessel, fruit-basket, grape-basket, and strawberry-basket.

806 SCHRAMM, J. L. F., *Dessau*—Manufacturer.

Samples of oil for watches, prepared from vegetable substances.

807 DIETRICH & SON, *Poessneck*—Manufacturer.

Specimens of flannel of different colours.

808 GOEBEL, F. D., *Wallendorff*—Manufacturer.

An assortment of articles in porcelain and glass.

809 SCHMIDT, C. H., *Poessneck*—Manufacturer.

Twelve coloured transparencies for lights, consisting of a wax composition, with frames.



183.

CARVED IVORY GOBLET. L. W. SCHULZ. MEINENGEN, PRUSSIA.

HARDT BROTHERS, Eisfeld—Inventors and Manufacturers.
 Paintings on glass, consisting of a Madonna, the both after Raphael; the Holy Family, after Raphael; a Madonna, after Murillo.

HILF, L. W., Meiningen—Inventor and Carver.
 Inventor of sundry ivory cups, and other works of ivory.

In Germany only that those finished and highly polished, carved in ivory, are produced at low prices; frequently, the whole trade in this branch of production may be said to be in German hands; magnificent works may here be more particularly that have been forwarded from Weissenfels, Nassau, and Meiningen.]

HILF, J. G., & SONS, Altenburg—Manufacturers of string and twine.

HOESE, G., Halle—Producer of brushes and bristles.

HUBER, J., Salzwedel—Manufacturer of cotton goods.

HUBER & BOEHME, Poessneck, Saxe Meiningen—Inventors and Porcelain Manufacturers. (Agent in London, J. Kendall, 8 Harp Lane, Great Street.)
 Assortment of articles of glass, porcelain, &c. Assortment of articles.

HUBER & NAEGLER, Gera—Manufacturers of assortment of woollen goods.

HUBER, W. L., Widow, Weissensee—Manufacturer of various articles.

HUBER, C. F., Erfurt—Manufacturer of bags, with and without seam, of Thuringian weaving.

HUBER, F. E., Merseburg—Manufacturer of collection of patterns of cane and whalebone carving.

HUBER & Co., Eilenburg—Manufacturers of assortment of cotton goods.

HUBER, H., Bernburg—Manufacturer of assortment of earthenware, consisting of a vase, coffee-pot, and flower-pots.

HUBER & SON, Brunswick—Printers.
 Books printed and published by the exhibitors, Graham's Chemistry, Henle's Pathology, Technology.

HUBER & Co., Saalfeld—Manufacturers of oil colours, water colours, Indian ink, and dyes.

HUBER, JOSEPH, Arnsberg—Producer of silver ore, sulphuret of lead, and sulphuret of iron (jack).

HUBER, H. F. L., Halberstadt—Manufacturer of lead in crystals, bottom pieces, and in groups.

HUBER, H. F. L., Halberstadt—Manufacturer of lead, the salt of Saturn of the old chemists, is lead, and is a compound of acetic acid and]

827 **BARRÉ & KESTER, Lillfeldt**—Manufacturers.
 Samples of wheat starch.
 [Wheat, or common starch, is obtained by steeping wheat until fermentation has taken place, and the gluten removed; or, still better, by dissolving out the gluten with a weak solution of caustic soda, or other alkaline liquor. The starch is deposited at the bottom of the vessel, and is purified by washing and passing through fine sieves, to separate the bran.—W. D. L. R.]

828 **MAKNEEL, FRIEDRICH, Weissenfels**—Manufacturer.
 A portfolio for newspapers, exhibited for the novel combination of wood and fancy work.

830 **BACHOVEN & VOLLSCHWITZ, Zorbst**—Manufacturers. (Agents in London, Brocklesby and Weasels, 4 Moscovy Court, Tower-hill.)
 Samples of black hat plush, dyed in Germany. The silk imported from Italy.

831 **SCHMIDT, J. C., Erfurt**—Manufacturer.
 Wax baskets and flower-pots.

832 **BÄEDEKER, JULIUS, Elberfeld**—Publisher.
 The Holy Bible, for church and family use, in the German language, printed in very small type, bound and unbound copies.

833 **LANGNER, H., Halberstadt**—Manufacturer.
 Paletot of nürz, with squirrel heads; muff and victorine, from polecat.

834 **ROYAL SALT WORKS at Schoenebeck, near Magdeburg**—Producer.
 Sample of common salt, fine grain, and of middling grain, from the Royal Salt Works of Schoenebeck.

835 **ARNOLD, CARL HEINRICH, Hesse-Cassel**—Manufacturer.
 Ornamental paper-hangings: sized-pattern papering; papering with representation of German sports; satin hangings, patterns in velvet and gold; patterns of middle quality hangings; patterns of common hangings.

836 **JANNASCH, O., Bernburg**—Proprietor.
 Samples of vinegar-spirit and medical vinegar, produced by the exhibitor.

837 **DEVISSE, NAPOLEON, Berlin**—Artist.
 Column in Venetian and Florentine mosaic, mounted on iron.
 Sphere in Venetian and Florentine mosaic, with pedestal.
 Octagon and round table, with feet of Florentine, Roman, and Venetian mosaic, enclosing in its interior a mechanical contrivance.
 Hexagon table, in Florentine, Venetian, and Roman mosaic, with feet, enclosing in its interior a mechanical contrivance.
 Sphere, containing all the letters of the alphabet, in Venetian and Florentine mosaic.
 Venetian and Florentine column, with the portrait of H.R.H. Prince Charles of Prussia, basso-relievo in the centre, mounted on iron.

838 **SPINN & MENKE, Berlin**—Upholsterers.
 A highly-finished bookcase, the front of nutwood, the inside of oak, with bowed glass doors.

839 **GERHARDT, AL., Berlin**—Cork-cutter.
 Pictures and articles executed in cork-work; with gold and silver chasings.

840 WAGNER, J., & SON, *Berlin*—Jewellers.

Table ornament in shape of a fruit-dish, four feet and a half in height, representing the several degrees of civilization among mankind.

This ornament is represented in the accompanying Plate.

[In the department of burnished works in gold and silver, &c., the Germans are excelled by the prodigious opulence and splendour of England and France. The German market, in fact, is too poor and too contracted to admit of its maintaining any competition in this branch of industry with either of those wealthy countries. But, in point of taste and elaborate and scientific execution, the Zollverein is not behind.

Berlin, Hanau, and Dresden, have furnished contributions to the Great Exhibition, amply sufficient to confirm this opinion. In support of it, attention may be directed to the silver work by the present exhibitor which stands before the Zollverein Central Hall.]

841 ZEITZ, J. F., *Berlin*—Furrier.

A blue-grey paletot, lined with the skin of the Virginian pole-cat.

A camail of nürz tails, consisting of 6,391 pieces, with light-coloured silk lining.

842 BLANKENSTEIN, *Potsdam*—Inventor.

Rosewood box, with carved frame, for gloves.

843 SCHUEB, DR., & KÖHRING, *Brandenburg*.

Chemical productions.

844 ZSCHILLE, J. C. & K., *Frankfort-on-the-Oder*

(31 Finsbury Square)—Manufacturers.

Different samples of woollen cloths.

845 LAVERDURE, *Breslau*, Sculptor, and VON MINUTOLI, Councillor, *Leignitz*.

Twenty-two patterns of various Silesian marbles, from a newly-discovered quarry.

846 FRIEDENTHAL, C., *Giesmannsdorf*—Producer.

Newly-invented lasting dried powdered yeast, by the exhibitor.

847 KIELMANN, *Posen*, Mason; and VON MINUTOLI, *Leignitz*.

Three mosaic floors in the old Roman style, of marble chips and glass paste, for flooring.

848 GEBAUER, C. J., *Königsberg*—Manufacturer.

Two rosewood pianofortes.

849 WESZELY, in *Klein-Nuhr*.

Two specimens of elk-heads, modelled after nature.

850 THE COMBINED MINING WORKS OF MANSFELD.

Samples of the processes followed in the mining works of Mansfeld for obtaining copper and silver:—1. Bituminous marl slate, two slabs; 2. The same with variegated copper ore and fish impressions; 3. Sanderz; 4. Burnt slate, two slabs; 5. Slags of slate smelting; 6. Raw copperstone; 7. Powdered copperstone; 8. Powdered copperstone roasted; 9. Cemented silver; 10. Fine silver; 11. Slags of residuums; 12. Thin copperstone; 13. Black or raw copper; 14. Refined copper; 15. Fine copper.

Bars and turned samples of refined copper prepared from Mansfeld black copper by a process, without interruption, in cupola furnaces, with gas oxide of carbon, then hammered or turned.

851 KRÖNING, DR., *Stollberg*.

Pattern sheet of substances woven and unwoven, which are gilt or silvered by a mechanical process.

852 HAENEL, JULIUS, *Lauchhammer*—Sculptor.

Ostrich, giraffe, dog, and tiger, in plaster; full-sized female tiger, in plaster (after the original in the Zoological Gardens of London).

853 PRETORIUS, L., *Weissenfels*—Carpenter.

Tray, bordered à la rococo, of ebony wood, ornamented with foliage, the plate of mosaic wood, with inlaying of mother-of-pearl.

85 GRESSLER, E., *Erfurt*—Manufacturer of Chemical and Apothecaries' Apparatus.

Coal-zinc battery of twelve elements; twelve coal cylinders. A machine for spreading plasters. An economical furnace, applicable to apothecaries' laboratories.

855 SCHILLING, VALTIN CHR., *Suhl*—Manufacturer.

Brace of target pistols, with fine grooved damascened barrels, for pointed bullets; fine locks, put together without screws; filigree iron furniture; buckles ornamented with dolphins; half-stocked, fluted, and adorned stocks, with all the instruments to charge and clean them; such as powder-flask, bullet-mould, case for percussion-caps, measure for charge, oil flask, trigger, screw-driver, and ramrod—all in a box, lined with velvet.

856 ROYAL SALTERY, *Duerrenberg*—Producers.

Samples of coarse and refined salt.

Five pieces of brown coal, shaped by a pressing-engine. The engine by A. Milch, Cologne.

857 HEINRIGS, J., *Cologne*.

A caligraphic tableau, representing the Queen of England.

858 FARINA, JOHANN MARIA, *opposite the Julich's Place, Cologne*—Manufacturer.

Samples of eau de Cologne of one quality, in a Gothic case.

859 ZANOLI, CARL ANTON, *Cologne*—Manufacturer.

Samples of eau du Cologne.

860 GAMMERSRACH BROTHERS, *Meckenheim, near Bonn*—Manufacturers.

Specimens of leather and varnish, exhibited on account of their excellent flexibility and polish.

861 MOSER, A., & CO., *Aix-la-Chapelle*—Manufacturers of Calf-skin for Shoes.

A double planing machine on a new construction, invented by the exhibitors.

862 SIEGFRIED & WALDTHAUSEN, *Burtscheid*—Manufacturers.

Twelve pieces of twilled cloth and satin-de-laine.

863 HÖSCH, EB., & SONS, *Düren*—Manufacturers.

Rolled zinc-plates for glazing paper. Raw material from the Rhine provinces.

864 SCHEIBLER & SON, *Montjoie*.

Various woollen stuffs for trousers, and loose carded woollen goods.

865 BÖTCHER & ENGEL, *Imgenbruch*—Manufacturers.

Fancy stuffs for summer and winter trousers, manufactured partly of German, Australian, Cape, and Odesa wools.

866 DELIUS, C., *Imgenbruch*—Manufacturer.

Woollen stuffs for trousers and paletots.

867 MERTENS, H. J., *Imgenbruch*—Manufacturer.

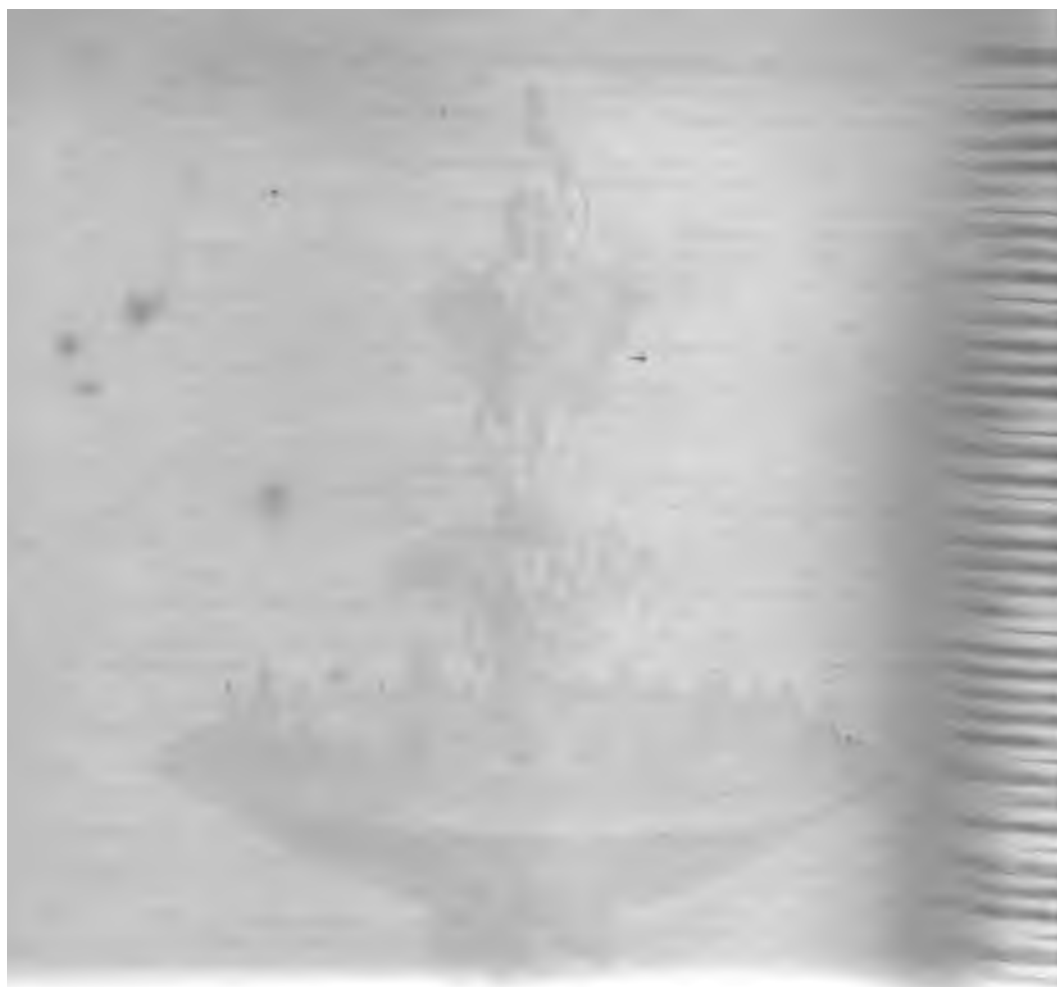
Different stuffs for coats and trousers.





- NS, P., *Imgenbruch*—Manufacturer.
uffs for coats and trousers.
- RD & JORDAN, *Coblentz*—Importers.
s in London, Deinhard and Jordan.)
Rhine and Moselle wine.
- EYGER, A., & Co., *Creuznach*.
s of Rhine and Moselle wine; "mousseux."
- MICHELS, FR. X., *Andernach*.
basaltic lava millstones.
- HEIM & NEEF, *Solingen*. (Agents in Lon-
D. Sharpe, 26 Broad Street Buildings.)
nt of scissors, and a card with unfinished
- BERG BROTHERS, *Wald*.
samples of scissors.
- B BROTHERS, *Lennepe*—Manufacturers.
violet cloth; two pieces of fine black cash-
- EVERKUS, C., *Wermelskirchen*.
ts of ultramarine.
- RKORT, CHRISTIAN, *Harkorten*.
dmium, lead, sulphur, manganese, alum, cast
ic. A shamoy-tanned wild buffalo-skin.
ussia leather. Various sorts of helmets for
rs, both officers and privates.
- ER, FRED., *Carlsruhe*—Manufacturer.
transparent drawing) paper, invented and
hibitor.
- ER, F., *Heidelberg*—Manufacturer.
e in velvet; glove boxes in velvet, orna-
tory; writing desks; shaving cases; pocket-
id spectacle cases, porte-monnaies.
- LHALTER, G., & Co., *Neukirch, Baden*—
Watch and Clock Makers.
ical clock, and several small ones.
- LE, H., & STEUERT, *Neukirch, Baden*—
Watch and Clock Makers.
thout weights, pendulum, or any visible
-acting organ, with four barrels.
- z, JOSEPH, *Meiningen*—Carver in Ivory.
ivory snuff-boxes, cigar-cases, walking-stick
daggers, &c.
- z, *Wilhelm, Meiningen*—Carver in Ivory.
cles in ivory, consisting of note-book, porte-
cases, snuff-boxes, with devices, cigar-cases,
- DIESEL & Co., *Saalfeld*.
nd other colours, Indian ink, &c.
- 883 HEIMBURGER, *Sonderhausen*—Joiner.
Table of Jacaranda wood, inlaid with mother-of-pearl,
metal, and ivory, containing twelve scenes from Shakspeare,
and a portrait of the poet.
- 884 SCHÜTZE, ANDREW, *Frose, near Aschersleben*—
Manufacturer.
Two pieces of fur made of marmot's skin.
- 885 ENGEL, PH., *Hanau*—Engraver.
Specimens of new productions for the printing press,
with a few original copies, exhibited on account of the
superior workmanship, which enables the printer to imi-
tate lithographic prints.
- 886 REIFFERT, J. C., *Bockenheim*—Coachmaker.
Various models of railway carriages.
- 887 GLEICHAUF, J. B., *Hanau*—Gunmaker.
A needle-pistol with twelve barrels.
- 888 KELLER & CO., *Birkenfeld, Oberstein*; 88 *Hatton
Garden, London*; and 62 *St. Paul's Square,
Birmingham*.
A tea-service, consisting of forty pieces, in fine red cor-
nelian, twelve tea-spoons in white cornelian, three vases in
red cornelian and onyx, two snuff-boxes in onyx, three
mounted jewel boxes of fine green moss agate, and two
etuis containing samples.
- 889 WILD & ROBINSON, *Birkenfeld, Oberstein*; and
51 *Hatton Garden, London*.
Bronzes, flower-vases, bracelets, &c., of agate.
- 890 GÖRLITZ, L., *Idar, Birkenfeld*. (Agent in London,
O. Frauenknecht, 80 Bishopsgate Street Within.)
Box, necklace, plates, &c., of agate.
- 891 EIFLER, W., *Idar and Oberstein, near Mainz*—
Worker in Agate. (Agents in London, Nestle
and Huntsmann, 6 Great Trinity Lane.)
Samples of agate work.
- 892 MEYERN-HOHENBERG, LOUISE VON, *Coburg*.
A tabernacle of Serravezza marble, in the form of a
house in the Byzantine style, with scriptural devices and
inscriptions.
- 893 SOMMER, F., *Jauer, Silesia*—Inventor.
A wind instrument (the Sommerophone). This instru-
ment has a compass of four octaves from E to E.
- 894 JANDA, J., *Berlin*.
A statuette of Shakspeare, carved in wood.
- 895 STOLLE, DR. EDWARD, *Berlin*.
Geographical map of the beet-root sugar industry in
Europe.
- 896 KRIEG, J., *Odelshofen, Baden*.
Specimens of Rhenish slit hemp for ropes and cords.
- 897 EGLOFFSTEIN, Count. (Agents, John Anderson &
Sons, 65 Old Broad Street, London.)
Eve and the Serpent, a statue in marble executed by
Van der Ven at Rome.





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... and ac-
... pursuit

BRITISH MUSEUM



Royal Commissioner in London, DR. SCHAFFHAUTL, 5 Albion Street, Hyde Park Terrace.

NEARLY one hundred exhibitors from Bavaria have sent their contributions to the Exhibition. The section Machinery is not represented by these articles, but the other three sections are illustrated in various directions by the specimens sent from different towns. A considerable manufacture has sprung up in Fürth, a Bavarian town, for bronze powders, tinsel, and coloured foils. These are employed in the arts in various ways: no less than ten or eleven exhibitors out of the number stated appear in the capacity of manufacturers or producers of these articles. The manufacture involves a considerable amount of skill, and is in many respects a chemical process. Ultramarine is likewise prepared in considerable quantities, and with much success, by Bavarian manufacturers. The agriculture of the country is represented by wheat, barley, &c. Several exhibitors are producers of philosophical and musical instruments, and an interesting collection of these objects is brought together. The cotton, silk, and flax manufactures also appear, together with some articles of cotton and caoutchouc, forming a sort of elastic material for underclothing. Specimens of ornamental glass, and a fine collection from the Royal Porcelain Manufactory, near Munich, of objects of high interest as works of design, and as specimens of the ceramic art, are exhibited. A number of finely-painted vases, and some pictures on porcelain, are shown. The specimens of ivory goblets exhibited are also very beautiful. The manufactures of marquetry and parquetry from Munich, and candelabra of stag's horn, also deserve notice. Some results of a galvano-graphic process are exhibited, which bear a resemblance to a similar process carried on in this country. It is also deserving of notice that there is a specimen of engraving by the electric current as applied to etching purposes, with prints from the plates, indicating that in Bavaria, as in this country, this singular fact has been observed. In Class 30, United Kingdom, similar specimens on steel plates are produced by the British inventor. The colossal lion in the Nave, which is in the same state as when removed from the mould, is an evidence of the success with which the art of casting in bronze has been practised at Munich. Other statues exhibit a beautifully chaste and softened effect, produced by the skilful use of the chisel.

The principal towns exhibiting in the Bavarian collection are Munich, Nürnberg, Fürth, Hof, Bamberg, and Würzburg.—R. E.

1 BENDA, GEORGE, *Fürth, near Nürnberg*—Producer.
Specimens of bronze powder, and bronze colours, in a small case.

2 BIRKNER & HARTMANN, *Nürnberg*—Producers.
Specimens of bronze colours and leaf metal.

3A BRANDEIS, I., jun., *Fürth, near Nürnberg*—
Manufacturer.
Samples of bronze powder, of leaf-metal, and bars of molten metal.

3B MEIER, J. C., *Fürth, near Nürnberg*—Producer.
Specimens of metal, gold, and bronze colours.

4 FUCHS & SONS, *Fürth, near Nürnberg*—Producers.
Various specimens of metallic leaf; bronze powder; rolled orsedew (tinsel), and shavings (waste of leaf-metal).

[Bronze powders are prepared in various ways; some of them mechanical, and some chemical. Dutch metal and mosaic gold, which is only a fine kind of brass, are

ground to a powder; copper is precipitated by clean iron plates from a solution of the nitrate of copper; it is then dried and exposed to different degrees of heat, so that, by becoming more or less oxidized, various shades of colour are produced. Plumbago, cinnabar, and other metallic colours are mixed with the bronze powders, to produce variety of tint.—R. H.]

5 LINZ, JOHANN LEONHARD, *Fürth, near Nürnberg*—
Producer.
Specimens of white leaf-metal made of English Banca tin.

6 LEPPER, GUSTAV, *Fürth, near Nürnberg*—Producer.
Fifty different samples of bronze powder, various colours. Metal-leaf, various colours.

7 STOEBER'S SON, LUDWIG, *Fürth, near Nürnberg*—
Producer.
Specimens of bronze colours in small bottles.

BE & PORSELIUS, Ratisbon—Producer.
of extract of nut of the *Quercus cerris*.

STENDÖRFFER, J. J., & C. KUBLER, jun., Fürth, near Nürnberg—Producers.
of beaten metal (Dutch metal).

B, G., Fürth, near Nürnberg—Producer.
of beaten metal (Dutch metal).

SMOS, J. P., Nürnberg—Producer.
of gold and silver wire.

H. M., Nürnberg (Agent in London, W. Stein, 15 Watling Street)—Producer.
of soft and malleable brass wire for metallic
76,000 feet. One pound of extra fine cha-
for mine lanterns, length 41,000 feet.

MANN, HENRY, Schweinfurt—Producer.
of blue, black, and green ultramarine.
ulamarine is obtained from the variegated blue
ed *Lazulite* (*Lapis lazuli*), by a tedious
blue colouring matter combining with a
s, and the other earthy matters are washed
ul ultramarine is formed by heating to red-
re of china-clay, sulphur, and carbonate of
which it may be inferred, that ultramarine
nd of silicate of alumina and silicate of
]

I., Fürth, near Nürnberg—Producer.
of bronze powder and gold leaf metal.

EB, WILHELM, Schweinfurt—Producer.
of varnish colours in small glass bottles.
inting ink.

UCK & UHLICH, Bamberg—Producers.
specimens of ultramarine.

B, J. J., Fürth, near Nürnberg—Producer.
of various bronze colours.

LEFF & Co., Schweinfurt—Producers.
of ultramarine. Green ultramarine.

ERSCHMIDT'S SON-IN-LAW, Ratisbon—
Producer.
of Bavarian wheat, grit, fodder, flour, bran,
heat-meal, pollard, rye, rye-meal, provender

CHRISTIAN AUGUST, Munich—Producer.
of its, Gillies & Horne, 17 Mark Lane.)
of Bavarian wheat; wheaten grits; and meal
arley. Exhibited on account of their clean-
quality.

INLEIN, C. V., Bamberg—Inventor.
of highly-finished gun, with Damascus barrel,
the old German style, with emblems, &c.,
the art of projection from its first invention
time; with ebony stock, inlaid with mother-
silver apparatus; covered lock of a peculiar
struction; firing quickly, and carrying to a

REUTER, J., ADAM, Ratisbon—Inventor
and Producer.
of extra fine, highly finished pistols, inlaid
sted with gold; the barrels are engraved
"hair dressed and rifled in a peculiar
secret of which has been solely in possession

of the exhibitor's family for more than one hundred years.
The barrels are of German steel, with patent screws.
peculiar apparatus for assisting the aim at target shoot-
ing, open percussion locks, executed in steel, with hair
trigger, the stocks of nut-wood, carved in relievo, with
complete apparatus.

2. A pair of extra fine pistols, of the same quality,
though ornamented in a less costly style.

The peculiarities of these two pairs of pistols consist
in the following:—When loaded with three-quarters of a
drachm of powder of ordinary strength, and the ball
rammed down with a greased patch, they shoot with the
accuracy of a rifle at 25 and 50 yards; and by raising the
sight, but without additional powder, will, at a distance
of 80, 160, or even 240 yards, send a ball through a deal
plank half an inch thick, when the ball will be as flat as
a shilling, if an iron plate is placed behind the deal plank.
Moreover, the grooves of the barrel, although as fine as a
hair, are said not to wear out; the pistols may be used
daily for years, without its being necessary to have them
re-filled.

22 **BAADER, JOHAN A. & Co., Mittenwald on the Isar**
—Producer.

Two violins; tenor; and violoncello. Exhibited on
account of the fineness of tone and beauty of the wood.

23 **BOEHM, T., Munich**—Inventor and Manufacturer.

A cylindrical silver flute, stated to be of superior tone,
and equal and correct tuning; these advantages are claimed
to be attained by the following improvements:—Correct
proportions in the construction of the tube, a new arrange-
ment of the key-mechanism, which allows the holes to be
made as large as required, and a new form of embouchure,
of gold, which offers no impediment to the vibrations
of the tube.

Flute d'amour (in B flat), of German silver, of the same
construction.

Model of a patent hautboy, constructed on the same
principles, with improvements since made by the inventor.

24 **EISENMENGER, G., Fürth, near Nürnberg**—
Manufacturer.

Collection of opera-glasses, spectacles, and eye-glasses,
lorgnettes.

25 **ERTEL, TRAUOGOTT, & SONS, Proprietors of the**
Reichenbach Mathematical and Mechanics' Insti-
tute—Inventors and Producers.

Astronomical universal instrument; constructed on a
new principle; with telescope.

[Munich is celebrated on the continent for the skill of
the makers of philosophical and musical instruments,
carrying on their occupation at that place. Some of the
optical instruments are of a high order of excellence, and
are consequently in much use for those delicate and ac-
curate manufactures carried on in the practical pursuit
of the science they represent.—R. E.]

26 **ISSMAYER, I. M., Nürnberg**—Producer.

Collection of magnetic articles, toys, &c.

27 **JORDAN, J. F., Fürth, near Nürnberg**—
Manufacturer.

Flexible syphon, ear-tubes, pipes, &c.

28 **KAPPELLER, L. & SON, Hafnerzell, near Passau**
—Manufacturers.

Various sorts of black crucibles for melting gold, silver,
iron, steel, &c.

29 **KLINGER, C. ABEL, Nürnberg**—Producer.

Terrestrial and celestial globes, with stands and com-
passes.

- 30 & 31 **MERZ, GEORGE, & SONS, Munich**—Inventors and Manufacturers.
Refractor, having 45" apert., 48" focal length, for variable latitude; equatorially mounted.
Microscope, with various object-glasses and three eye-pieces, for nine magnifying powers, from 20 to 1,800 times. The instrument is provided with a screw micrometer and the necessary apparatus for holding and illuminating objects.
- 32 **MECHANICAL SCHOOL, Zwoybrücken.** (Directed by Dr. H. REINSCH.)
Electro-magnetic apparatus, and electro-magnetic rotatory apparatus, containing a magnet capable of holding 50 lbs. weight.
[A very large amount of ingenuity has been expended on the attempt to apply the electro-magnetic force to mechanical purposes, in the room of prime movers. The experiments hitherto made have yielded hopeful but few practical results; and several instruments are exhibited which represent the various modes in which the principles of motion from the electro-magnetic agency have been applied. The practicability of obtaining motion cannot be denied, but its comparative economy is still to be demonstrated.—R. E.]
- 33 **NEUNER & HORNSTEINER, Mittenwald on the Isar**—Producers.
Violoncello, tenor, and violins. Fernambuck violin and violoncello bows.
- 34 **RIEFER, CLEMENT, Maria Rhine, near Nesselwang**—Inventor and Producer.
Case of improved mathematical drawing-instruments, in German silver.
- 35 **PFAFF, MICHEL, Kaiserslautern**—Producer.
Bombardon ophicleide in C, with four valves and mouthpiece. Trumpet in B flat, with three valves, four crooks, and mouthpiece.
- 36 **BRENTANO, PELLOUZ, & Co., Augsburg**—Manufacturers.
Patterns of silk cloth, with gold and silver; for furniture and church apparel.
Patterns of various stuffs and cloths, manufactured from Bavarian silk.
Samples of the silk.
- 37 **SIMON, HENRY, Zwoybrücken**—Manufacturer.
Various assortments of silk plush.
- 38 **KNOBB, F., Zwoybrücken**—Manufacturer. (Agents in London, Stahlschmidt & Co., 14 Mark Lane.)
Five pieces of silk plush, for hats.
- 39 **BRAUN, LEONHARD, Wunsiedel**—Manufacturer.
Specimens of Manilla damask made from cotton and Manilla hemp, mixed, for furniture and carpets.
- 40 **SCHUTZMANN, AUGUST, Munich**—Producer.
Canvas, prepared for paintings, twenty-three feet by thirteen feet four inches.
- 41 **TRENDEL J. J. & SONS, Culmbach**—Manufacturers.
Linen damask. Striped half-linen cloth for trousers. Fine white-linen satin; half-linen satin.
Half-linen cloth for trousers; the same of half-linen thread.
- 42 **GEBHART BROTHERS, Hof**—Manufacturers.
A large assortment of shawls and handkerchiefs, cotton and wool, and woollen.
Drawers, of cotton and caoutchouc.
- 43 **LIENHARDT, FREDERICH, Hof**—Manufacturer.
Cotton goods; cotton mixed with wool.
- 44 **STEINHAUSER, HEINRICH, Hof**—Manufacturer.
Shawls of wool, mixed with cotton.
Tartans of mixed fabric.
- 45 **GRIESS, LOUIS, Landau**—Manufacturer.
Girths for horses of bleached hemp; girths unbleached. Halter, of red woollen thread; halter, of white hemp twist.
- 46 **MAYER, IGNAZ, Munich**—Manufacturer.
Enamelled coach hides. Enamelled calf-skins.
Japanned shoe calf-skins. Curried bridle leather. Curried hog-skin for saddle seats.
- 47 **HAENLE, LEO, Munich**—Producer. (Agent in London, Mr. Schick, 56 High Holborn.)
Silver and gold paper, plain and ornamental.
Bronze powder, and specimen of printing with bronze colours.
Samples of real gold paper borders, &c.
- 48 **ESCHERICH, THEODOR, Munich**—Manufacturer.
Various portfolios and cases, port-monnaies, cigar-cases, &c., in Morocco leather.
- 49 **KOHN, MANUEL T., Main-Bernheim**—Producer.
Samples of sealing wax.
- 50 **SAMMET, J., Markstett**—Producer.
Specimens of black ink for copper-plate printing.
- 51 **PRAETZSCH, MINA, Hof**—Producer.
Specimen of embroidery in crape threads, representing "the Madonna."
- 52 **MAYER, EMILIE, Aschaffenburg**—Producer.
Embroidery in silk, after a picture by Angelica Kauffmann.
- 53 **FRANK, JOHANN, Ratisbon**—Producer.
Ladies' boots of satin and of leather and black cloth. Embroidered slippers.
- 54 **FEHR & EISENRING, Augsburg**—Producers.
Metal plates, with letters and characters in relieve, for the instruction of the blind.
- 54A **KALTENECKER, J., Munich**—Manufacturer.
Samples of textures of wires, hair, wood, and cane.
Sieve, with bottom and cover, of parchment.
Sieve, of parchment, for sifting gunpowder.
Triple sieve, for sorting.
Brass drum, with improved tuning screw.
Model of double gratings, for drying malt.
Vizors used in fencing.
- 55 **GRADMANN, A., Erbach, near Homburg**—Producer.
Forty specimens of horse-shoes.
- 56 **JANSEN & LUEHDORFF, Hof**—Manufacturers.
Fifty pieces of ginghams.
- 57 **KUHN, C. (SCHMIDNER, E.) Nürnberg**—Producer.
Patterns of gold and silver-plated and copper wire spangles, &c.
- 58 **KULLRICH, FRANZ, Munich**—Producer.
A casket with ornaments for ladies.
- 59 **TROELTSCH & HANSELMANN, Weissenburg**—Producer.
Patterns of gold and silver lace.

The advantage in employing these boilers is obvious, as any quantity of tea or coffee can be prepared and the strength increased or decreased at pleasure. The mechanism is very simple and durable, very easy to use, and entirely free from the danger of being damaged.

79 BIRKMANN, MATHEW, *Nürnberg*—Producer.

Patterns of black-lead pencils, of different degrees of hardness.

80 EICHNER, G. L., *Nürnberg*—Producer.

Varnished toys of tinned-iron plate.

[The town of Nürnberg has long been celebrated for the extent of its toy trade. These trifling objects become of great commercial importance, the demand being large and constant. They are made at an extremely cheap rate, and are consequently available for exportation to a considerable extent. They are sent to all parts of the world.—R. E.]

81 FABER, A. W., *Stein, near Nürnberg*—Manufacturer.

Specimens of black-lead pencils.

82 REHBACH, J. J., *Ratisbon*—Manufacturer.

Black-lead pencils. Case with black and red lead pencils. Boxes with crayons for drawing.

83 HAGEN, MICHAEL, *Munich*—Sculptor.

Goblet of ivory, carved with figures and arabesques representing a procession of bacchanals; the inside of gilded silver.

84 HALBIG, JOHANN, *Munich*—Inventor and Producer.

Goblet, with figures, with the emblems of the German empire, in plaster of Paris.
A bust of Schlanders marble.

85 HANFSTAENGEL, F., *Munich*—Producer.

Specimens of galvanography, combining the effects of the brush with those of the chisel, produced by the method invented by Professor Franz von Kobell, at Munich.

Original copper-plate, with the drawing in relief.
Secondary, or printing-plate, produced by galvanism.
Print from the latter plate.

86 KELLNER, STEPHAN, *Nürnberg*—Producer.

Glass painting—a copy of the window, by Volkanimer, in St. Lorenz church, at Nürnberg.

87 OZANN, Dr. G. W. (Professor at the University), *Würzburg*.

Engraving on a tin plate, produced by the action of the hydro-electric current; and prints taken from the plate.

[In Class 30 of the United Kingdom may be seen specimens, by a British exhibitor, of engraving by electricity upon steel plates, together with proofs from the plates. The same effect is here obtained upon a plate of tin, with the same results.—R. E.]

88 KNOLL, CONRAD, *Munich*—Sculptor.

Model of a goblet, in plaster of Paris, to be cast in bronze: "Loving and living on the Rhine."

The accompanying Plate 172 represents this goblet, with a specimen of porcelain from Nymphenburg.

89 LEEB, JOHANNES, *Munich*—Sculptor.

Two figures in Carrara marble—

1. Cupid sharpening an arrow; and
2. A girl (Innocence) playing with a nest of little Cupids.

90 MILLER, FERDINAND, *Munich*—Producer.

Colossal lion, fifteen feet long and nine feet high—one of two which have been cast at the same time out of one furnace. This lion appears in the same state as when it left the foundry, being raw cast in bronze, showing the possibility of executing casts in one piece of almost any weight and size required. It is exhibited also as a specimen of the new method of the founder to preserve the pure natural metallic colour of the cast without being obliged to use the chisel. The adjoining Plate 15 represents this statue, and is accompanied by another, which shows the position of the statue in this group, which it forms a part.

Two statues, seven feet high, modelled by Schwabthaler, cast in bronze and finished with the chisel, representing specimens of the effects of the artificer's art in chiselling in producing a deadened surface:—

Libusa, Queen of the Bohemians, anno 700.
George of Podiebrad, King of the Bohemians. The statues are represented in the adjoining Plate 140.

91 MUHR, JULIUS, *Munich*—Producer.

Stereochromic picture upon mortar-ground, plastered wood; a new method for producing indestructible paintings on walls; invented by J. von S. Fuchs, at Munich.

The medium for fixing the colours is "water-glass," a solution of a peculiar compound of silica and alkali.

Some large historical pictures in the new museum at Berlin were painted by Mr. Kaulbach, of Munich, after this method.

[In order to prepare a soluble glass, it is simply necessary to melt pure sand with a large proportion of alkali, and the glass thus formed, containing 30 per cent. of alkali, is soluble in boiling water. The solution may be used as an ordinary varnish, and applied to any surface which it is desirable to protect, but the soluble glass obtained in this way cannot be used for stereochromic painting. A glazed covering is left on the surface when dry.—R. E.]

92 SCHMIDT, CARL, *Bamberg*—Proprietor.

Paintings on porcelain, after Cornelius, Rembrandt, Lessing, Roekers, Van der Worff, Leonardo, and Waffel. An altar, with the Madonna del Sesto, after Raphael, with old German decorations.

93 ZEILER, FRANZ, *Munich*—Producer.

Silver fruit-plate in the form of a shell, in alto-relievo, representing Venus and Amor.

Two alto-relievos in silver, the one representing the storming of Belgrade, the other, the victory of the Sarmatians over the Turks by the Elector Max Emanuel.

94 FOLTZ, L., *Ratisbon*—Sculptor.

Model, in plaster, intended for a prize medal.

95 GIENANTH BROTHERS, Proprietors of Iron Forges at *Hochstein, Baviere Rhene-Palat*.

Iron for guns and railways.
Rolled and wrought-iron, rasping-plate iron, and iron wire.

Various kinds of steel, bronze, gilt, and silver fancy articles.

96 WEPPLER, C. L., *Ansbach*—Manufacturer.

Fancy articles in straw mosaic.

97 NEUBRONNER, GUSTAV, *Frankenthal in the Rhine-Palatinate*—Manufacturer.

Six children's dolls, elegantly dressed.



128.
A GOBLET OF IVORY, CARVED WITH BACCHANALIAN FIGURES
AND ARABESQUES. M. HAGEN. MUNICH.

A PORCELAIN TANKARD,
FROM THE ROYAL PORCELAIN MANUFACTORY.
NYMPHENBURG, NEAR MUNICH, BAVARIA.





172. PORCELAIN JUG. BAVARIA.

GOBLET IN PLASTER. CONRAD KNOLL. MUNICH.

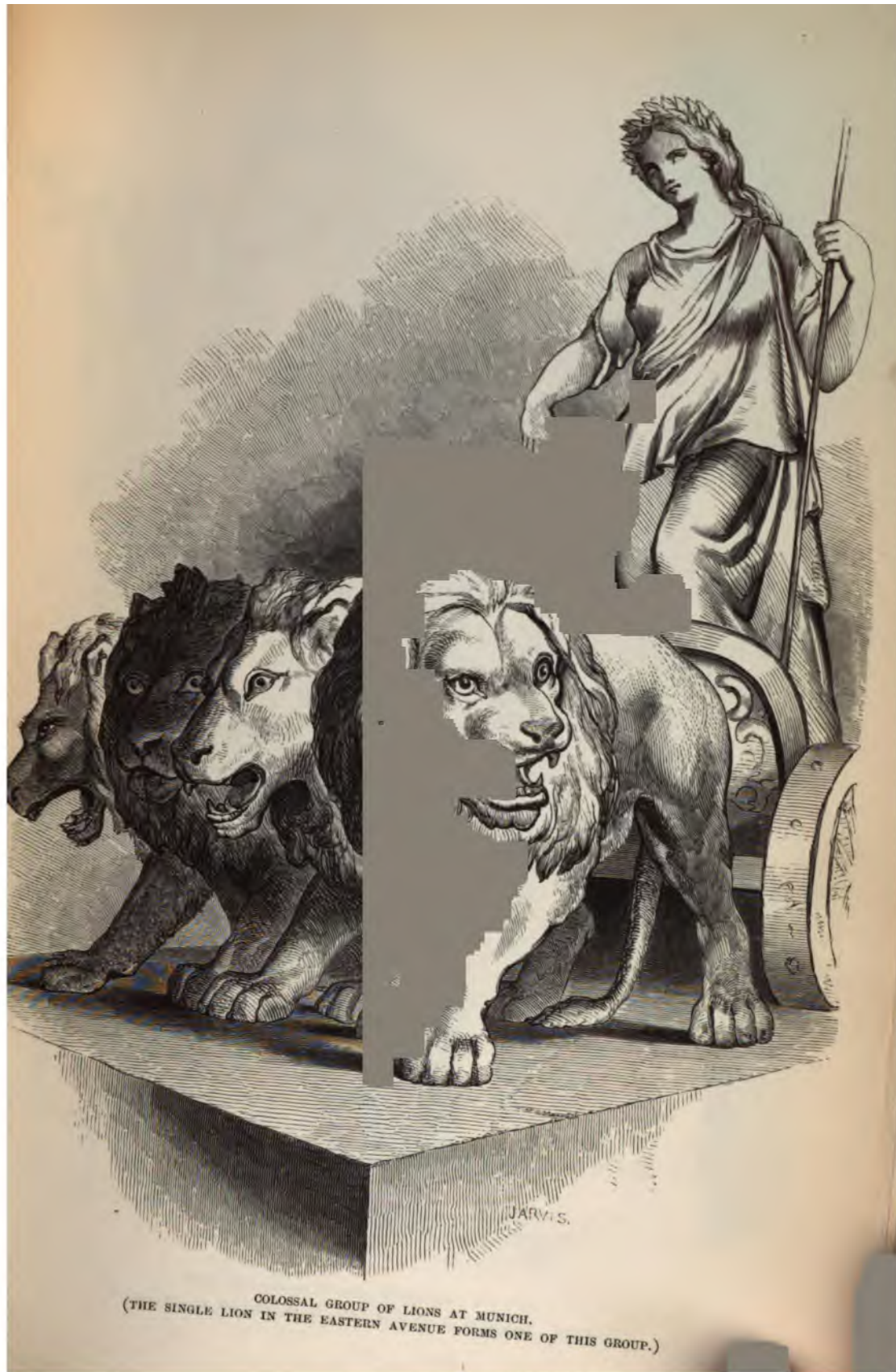




15.

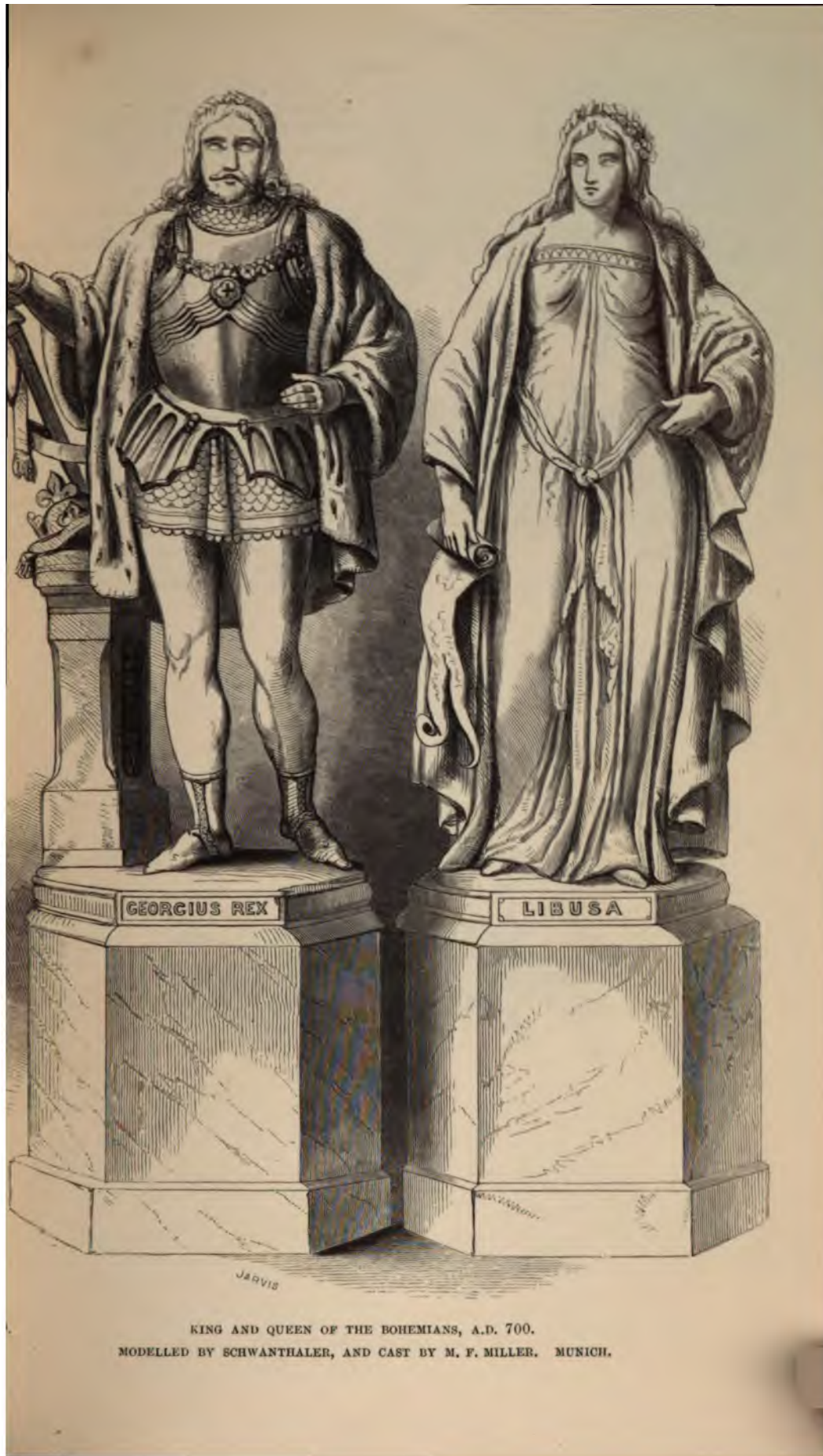
COLOSSAL LION, BY MÜLLER OF BERLIN.





COLOSSAL GROUP OF LIONS AT MUNICH.
(THE SINGLE LION IN THE EASTERN AVENUE FORMS ONE OF THIS GROUP.)





KING AND QUEEN OF THE BOHEMIANS, A.D. 700.
MODELLED BY SCHWANTHALER, AND CAST BY M. F. MILLER. MUNICH.



FF, C. A. & Co. *Würzburg*—Manufacturer.
Kendall, 8 Harp Lane, Great Tower Street).
s of leather blotting books, cigar cases, porte-
ocket-books, &c.

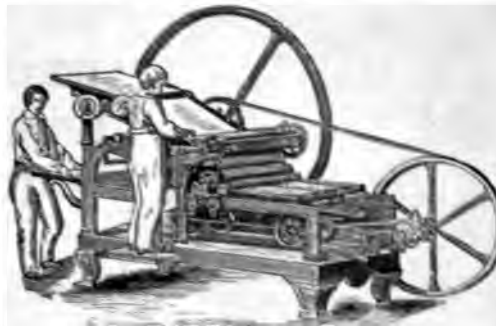
DNER & Co., *Klingenberg-on-the-Maine*—
Producers.
of fire-clay.

CKE, AUGUST, *Munich*—Manufacturer.
kettledrums, with a peculiar and ingeniously
apparatus for tuning them with quickness
m, and without noise.

HENBACH, C., *Augsburg*—Manufacturer.
r. L. Bamberger, 20 King Street, Snowhill).
g machine of a new and simple construction.
worked by steam, water, or hand power. It
ted to print from 1,200 to 1,400 sheets per
erson being sufficient to work it), and to com-
uracy of a hand-press with all the advantages
rinting machine. The novelty of the machine
nstruction, which renders it less liable to re-
he common printing machines, and the inking
which can easily be adapted to the nature
k to be printed. The perfect distribution of
effected by means of seven rollers, without

any inking-table before it reaches the form. The register
of the sheets is equal to that of a hand-press, and is
therefore adapted for the finest work. Wood-engravings,
cards, and work of any kind may be printed on this
machine with the same facility as book-work. They are
perfectly noiseless, in consequence of the smooth working
of the machinery, and do not occupy more room than a
common hand-press.

The size of the table of this machine is from 21 to 27
inches; but larger machines are made on the same prin-
ciple.



Reichenbach's Printing Machine





Dr. WOLDEMAR SEYFFARTH, LL.D., *Commissioner for Royal Saxony, 91 Piccadilly.*

A VERY complete collection of industrial products and of the materials constituting their basis is exhibited by this kingdom. Although the classified arrangement adopted in the United Kingdom has not been strictly observed in this case as in that of other foreign countries, still the arrangement of exhibitors in the Catalogue generally accords with the succession of the Thirty Classes, and consequently admits of ready comparison with other portions of this work. Among the raw materials are specimens of flax water-retted, and of yarn spun from it. The specimens of cobalt and nickel must attract the attention of all mineralogists and of others interested in the commercial and scientific application of these important metals. The former is principally used for the intense brilliancy of its oxide, the latter as a good substitute for colour, in combination with other metals. The cobalt colours are well shown in a series of specimens derived from the Royal Porcelain Works at Meissen. The nickel, cobalt ores, and colours are from one of the very few known sources of the former metal, the mine at Schneeberg. A few machines are exhibited—of these one is for planing type, one for boring, one for casting type, and one for sweeping narrow flues of chimneys. Among the philosophical instruments exhibited is an electro-magnetic telegraph similar to those employed on the telegraphic lines of Saxony and Bavaria: an electro-dynamometer, and specimens of watches made on the Swiss system, are also exhibited. The collection of musical instruments includes string and wind instruments of various kinds, harmonicas, pianofortes, &c. The textile manufactures are extremely well represented, especially in the woollen department, in which the long-established reputation of the Saxon manufacturers appears to be fully supported. This may be better conceived by the statement of the number of exhibitors of articles either entirely of woollen, or partially, as in worsted, their number is fifty-nine. The total number of Saxon exhibitors is only one hundred and eighty-eight: this proportion, therefore, of exhibitors of articles belonging to only one class, strongly indicates the prevailing direction in which the national industry of this kingdom exercises its activity. The producers of oil-cloth, and of that kind of it which is used for table-covers, are also numerous. A very valuable and extremely attractive collection of objects is that exhibited by the Royal Saxon Manufactory of China, the works of which have long been carried on on an extensive scale at Meissen. The vases, figures, and busts are delicately executed, and exhibit the excellent quality of this beautiful porcelain. An attractive object is a porcelain mirror frame painted in colours, with flowers in relief. Specimens of types and typography are also exhibited. Among the sculptures are one or two figures in Carrara marble.—R. E.

1 SOMMER, CHARLES, *Sornzig, near Mügeln*—Producer.

Specimens of flax cultivated in the Belgian manner, water-retted and swingled, also swingled and heckled. Patterns of extra fine yarn, spun from the flax. These, with the flaxes exhibited by Messrs. Watteyne and Gaetzschmann, are intended to show the progress made in the last five years in the culture of flax and its preparation in Saxony.

2 WATTEYNE, JOSEPH, *Lichtenberg, near Freiberg*
—Manufacturer.

Patterns of swingled flax, cultivated in the Belgian manner, and water-retted.

3 GAETZSCHMANN, WILLIAM, *Zittau*—Manufacturer.

Flax, watered and swingled, also partly heckled, in five different qualities.

4 THIEME-WIDTMARKTER & PUESCHEL, *Reudnitz, near Leipzig*—Manufacturers.

Bleached sponges, fine and common quality.

5 KUNZE, FREDERIC, *Rochlitz*—Manufacturer.

Varnished leather. Black varnished calves' leather for the use of shoemakers and belt-makers; the same description, sheep's leather.

EDAN & TIMARUS, Dresden—Manufacturers.
ment of dessert chocolates, consisting of figures,
d numerous other objects, partly brown, partly
; ornaments for dining-tables, nips, Christmas
&c.
ates and cocoa masses, in packets, as sold.

EDGREN, GUSTAV, Leipzig—Manufacturer.
printing-ink for hand presses, and for machines.

ODZINSKY, ANTON, Leipzig—Manufacturer.
oil-varnish. Calcined soot. Printing-ink for
and presses.

ROYAL SAXON COBALT AND NICKEL WORKS, Schneeberg (Agent, B. Biggs, 3 Lawrence Pountney Hill)—Producers.

s of twenty-eight specimens of cobalt blue, enamel
it and cobalt green. Metallic bismuth. Metallic
cubes.—This is stated to be the oldest establish-
he kind in the world.

l is now so largely employed in the manufacture
in silver, both in England and other countries,
xtraction from the ore has become an object of
mmercial importance. This metal is not, however,
, and mines are in operation in only a few known
where it has been found. It is generally asso-
in the specimens exhibited from Schneeberg, with
From other impurities it is separated by roasting,
cobalt generally by a chemical process of solution
ipitation.—R. E.]

THE ROYAL SAXON CHINA MANUFACTORY, Meissen—Producer.
ete series of ultramarine blue.

CHEMIDT & Co., Daubnitz, near Lommartzsck
—Proprietors.

-fuses:—No. 1, for common use in quarries,
ck cover, 1000 yards in one piece. No. 2, for
in mines, with grey cover. No. 3, for working
e water.
en of porcelain clay.

HOFMANN, C., Leipzig—Manufacturer.
ne for planing printing types; with three dif-
ferent tools, much used by type-founders and
in Germany.
ne for drilling corals.

BRÖCKHAUS, F. A., Leipzig—Proprietor.
ne for founding types, with instruments for two
sizes of letters.

RIECKBORN, H., Leipzig—Inventor.
ne for sweeping narrow chimneys.
apparatus, consisting of a common sweeping in-
; and a scratching instrument for the harder soot,
wn by a cord from the top of the chimney. The
g instrument, which can be separately used, is
vided with springs, in order to make it fit for
; that are from 7 to 10 inches wide.]

STOHRER, EMIL, Leipzig—Inventor and
Manufacturer.
o-magnetic telegraphic apparatus, with dial and
sed on the telegraphic lines in Saxony and Bavaria.
machine is put in motion by the current of a
lectro-magnetic machine of the exhibitor's con-
struction. In the present size of the machine the stream
enough to give signs for a distance of 100 miles.
k is moved only by the electric current and the
f its direction. The dial, which serves for giving
iving communications, has 36 fields. The indi-

cations are given by moving the arm the nearest way,
forward or backward, to the intended field. The hand,
which notes the signs, turns always to the right. At the
ordinary speed of the machine eight engines can be given
every second.]

16 **LEYSER, —, Leipzig**—Manufacturer.
Electrodynamometer, with mirror and telescope. For
measuring the intensity of the galvanic current.

17 **LANGE, ADOLPH, Glashütte**—Manufacturers.
Watches, manufactured as in Switzerland, by division of
labour. A box with a systematic arrangement of all
parts of a watch, and a series of watch movements in
four different stages of manufacture. Watch cases and
engraved patterns. Ten watches, anchor escapements,
chronometer balance. Three, with eight stones. Two of
them in gold, eight in silver cases, one with an arrange-
ment for winding-up the spring and regulating the hands,
without opening the case.

18 **KLEMM, GEORGE & AUGUST, Markneukirchen**
(Agents, I. D. Kohler and Son)—Manufacturers.
Stringed instruments. Bresciano counter bass and vio-
lonecello. Violin. (Paola Albani.) Amati, Stainer, and
cord rim violins. Violin in the antique style. Bass
viol. Guitar. Violin bow, with silver ornaments. Pat-
tern book of all the appendages of the violin.
Wind instruments. Chromatic horn, in F; ditto
trumpet, in G, after the newest style.

[The manufacture of musical instruments for sale occu-
pies many thousands of hands in the Upper Voigtland,
and is remarkable, not only for the cheapness of its pro-
ductions, but also for the excellence of the wind instru-
ments. Jacob Stainer, whose violins rivalled those of
Cremona, lived at Innsbruck in the Tyrol, 1647. His
signature was "Jacobus Stainer. In abeam prope
Oenipontem 1647." Bresciano was a noted bass maker.
—H. E. D.]

19 **HEROLD, C. G., Klingenthal**—Manufacturer.
Wind instruments. Tenor-tube, with three conic
valves. Brass reed horn, with eight valves. Brass
clarinet, in E, with sixteen keys. Ivory piccolo, in D
with ten keys. Mouth-harmonica.
Combs of wood; two pierced and two figured. The
manufacture of wood combs in Saxony is extensive, and
is usually combined with that of musical instruments.

20 **GLIER, FERDINAND, & SON, Klingenthal** (Agent,
Frederick E. D. Hast, 18 Aldermanbury)—
Manufacturers.
Wooden combs and a book of patterns. Violins, for
exportation. Specimens of fiddlesticks. Guitar. Trumpet
of German silver. Cornet of copper, in a case. Cornop-
ean of brass in a case.

21 **GLIER, GOTTLIEB, Markneukirchen**—Manufacturer.
Wind instruments. Sax horns. Bugle of copper, with
eight keys of argentan. Bugle of brass, with the same.
D flute of ebony, with keys.

22 **SCHUSTER, LUDWIG, Markneukirchen**—
Manufacturer.
Musical instruments:—Sackbut in B, of gilt brass,
with three cylinders; trumpet in G, of German silver;
cornet B alto, of gilt brass.

23 **SCHUSTER, M., jun., Markneukirchen** (Agent,
Charles Holland, 41 Finsbury Circus)—
Manufacturer.
Wind instruments:—Clarionets in B and D, in German
silver, with all the keys; B cornet, with three cylinders;
bass clarinet, with all the keys.

- 24 ZIMMERMANN, CHARLES, *Carlsfeld, near Eibenstock*—Manufacturer.

Harmonicas and accordions:—Chromatic concert harmonicas; bass and tenor harmonicas; accordions of forty and twenty notes.

- 25 BREITKOPF & HAEBTEL, *Leipzig*—Manufacturers.

Concert grand piano in a rosewood-case.

- 26 The ROYAL DIRECTION of RAILWAYS, *Dresden*.

Models of the two great viaducts of the Saxo-Bavarian Railway, over the Elster and Goltzsch valleys.

- 27 LATTERMANN, H. L. & SONS, *Morgenröthe, near Auerbach*—Manufacturers.

Tin goods. Pots and pans (culinary utensils) used in Bavaria. Machines for making coffee. Iron spoons.

- 28 RECHSTEINER, JOHN BARSH, *Connewitz, near Leipzig*—Inventor.

Twenty-eight specimens of wood-screws.

- 29 WOLF, J. H., *Burgstädt, near Chemnitz*—Manufacturer.

Iron wares. An assortment of nails, rivets, and tacks.

- 30 KRUMBHOLZ & TRINKS, *Neustadt, near Stolpen*—Manufacturers.

Steel wares. Various pocket-knives, with from one to thirty-two blades, and with ornamented handles; knives for cutting the end of cigars; champagne knives; table knives, &c. Hangers and daggers, with figured handles. Exhibited for execution and arrangement.

- 31 LEVY, HERMANN, *Dresden*—Manufacturer.

Carving knife and fork; with handles of solid mother-of-pearl, and pins of silver.

- 32 THUERIGEN, F. T., *Meissen*—Manufacturer.

A gun with a double barrel, on a new percussion principle.

- 33 STRUBE, THEODOR, & SON, *Leipzig* (Agent, Phillips Brothers, 31 Cockspur Street)—Manufacturers.

Plate, or silver works. A vase with fifteen silver flowers, weight 93½ ounces.

- 34 JAHN, AUGUST, *Dresden*—Manufacturer.

Eight sets of chess figures of metallic composition, with four chess-boards.

- 35 BUENAU, RUDOLPH, *Reudnitz, near Leipzig* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturer.

Composition goods:—Playthings for children. Sets of coffee and tea things, &c. Toilets, caskets, cigar-boxes, &c.

- 36 HOFFMANN, FREDERIC, *Schnitz*—Manufacturer.

Parts of lamps for the trade, made of brass. Lamp-burners in different numbers. Regulating jacks. Tubes with screw thread.

- 37 GRUHL, FREDERIC, *Kleinwelka, near Bautzen* (Agent, Mr. Mallalieu, 97 Hatton Garden, Holborn)—Manufacturer.

A bell of bronze, with iron clapper and tackle. The following cut represents this bell.

[This bell weighs 750 lbs. On the front side is a crucifix raised from the bell. On the bell are the inscriptions in English and German: "Come before the Lord, and worship him in the beauty of holiness." The reverse of the bell shows in-bas relief a head of Christ, after the model of the medallion cut by Mr. Hofgürtler Seiffert, of Dresden, and bears on each side the following appropriate inscriptions:—



Gruhl's Bronze Bell.

"Serve the Lord with gladness."—"Come before his presence with singing." The ornaments are designed by Mr. Schramm, of Zittau, and modelled by the sculptor Schulze, of Bautzen.]

- 38 STRAUSS, E. W., *Chemnitz*—Manufacturer.

Cotton yarn of different numbers.

- 39 HEYMANN, G. F., *Chemnitz*—Manufacturer.

Cotton yarn of different numbers and qualities.

- 40 BODEMER, GEORGE, *Zschopau*—Manufacturer.

Cotton yarn for stockings.

- 41 HOFFER, C. F., *Tannenberg, near Annaberg*—Manufacturer.

Specimens of twist, Nos. 30, 40, 50, spun from Georgia.

- 42 PANSA & HAUSCHILD, *Chemnitz*—Manufacturers.

Knitting and sewing cotton yarn of various numbers and qualities.

- 43 MATTOCH, C. G., *Chemnitz*—Manufacturer.

Cotton thread of different qualities and numbers.

- 44 THE SOCIETY of WORSTED SPINNERS, *Leipzig*—Manufacturers.

Tableau, showing the process of worsted spinning, from the raw wool up to the finest yarn. Specimens of worsted yarns of different numbers.

- 45 TRINIUS & SONS, *Leipzig*—Manufacturers.

A collection of worsted yarns, raw and coloured, various threads. Dyed by Bergmann and Co., Berlin.

PETZOLDT & EHRET, *Reichenbach*—Manufacturers.
Worsted yarns, of different numbers.

SOLBRIG, C. F., *Chemnitz*—Manufacturer.
Worsted and woollen yarn, of different numbers.

WOLFF, W. H., *Burgstädt, near Chemnitz*—
Manufacturer.

Woollen soft worsted yarn (raw), various Nos., each
lb. weight; $\frac{1}{2}$ lbs. Nos. 24 and 26 on the reel.

SCHMIDT, J. G., jun., & SONS, *Altenburg and
Penig*—Manufacturers.

Woollen yarn, in different colours, and a book of
ades.

[The number of wool-spinning factories at present in
Saxony has been estimated at about 120. Of
this number 40 are concerned in spinning worsted yarn,
and employ in this manufacture about 54,000 spindles;
and 180 spin woollen yarns with a power of about 80,000
spindles. The excellence of the Saxon cloth productions
is familiarly known.—R.E.]

BEHR & SCHUBERT, *Frankenberg*—Manufacturers.

Rich silk stuffs for tapestry, furniture, carriages, &c.
Silk, damask, brocatelle, and cotine. Portrait woven
silk. A flag of double satin, with fringes, &c.

ROEHLING & Co., *Annaberg, Saxony*—Manufacturers.

Rich silk stuffs, viz.:—Lampas. Damas lizeré. Bro-
rie Pompadour moiré à reserve. Façonné lancé découpé.
Laponné glacé. Armure.

BEYER'S WIDOW & Co., *Zittau* (Agents, John Wilson
& Sons, 159 New Bond Street)—Manufacturers.

Linen damask table cloths; tray cloths; with napkins
and doyleys—raw, white, and bleached.

[The manufacture of linen damasks, one of the oldest
departments of Saxon industry, is situated in that part of
the kingdom called Upper Lusace (Oberlausitz), the centre
of which is the town of Zittau. The weavers reside
principally in the villages of Schönau and Waltersdorf,
and in the neighbourhood; Gross-Schönau is, indeed, the
nucleus of this industry. The merchant-manufacturers
residing in this article reside partly in Gross-Schönau,
partly in Zittau; there are also a few firms at Dresden and
Leipzig.]

LIESKE & HAEBLER, *Gross-Schönau, near Zittau*
(Agent, Philip Amsel, 20 Providence Row,
Finsbury Square)—Manufacturers.

Linen (damasks), raw and bleached. Table tea-cloths,
and napkins of different prices, sizes, and qualities.

WAENTIG, CHR. DAVID, & SONS, *Gross-Schönau,
near Zittau* (Agent, Charles Holland, 41 Fins-
bury Circus)—Manufacturers.

Manufactures in linen damask—viz.: A large table-
cloth, unbleached. Napkins; all linen, unbleached and
dyed; half-silk, crimson, and chamois; half linen, red
and white.

Series of table-cloths, with napkins, of pure linen-
damask; including pieces executed in the years
70, 1775, 1800, 1805, 1810, 1818, 1835, 1844, and
50, to show the historical progress of the art.
Half-silk and silk damask napkins, partly with fringes.

PROELSS, sen., & SONS, *Dresden*—Manufacturers.

Table-cloths of raw and white linen damask. Napkins
raw and white linen damask, with armorial bearings.
Linen damask doyleys.

55 BRANDSTETTER, F., *Leipzig*—Manufacturer.

Table-cloth of linen diaper, 24 feet long, 8 feet wide.
Napkins.

56 BOEHLER, F. L., & SON, *Plauen*—Manufacturers.

White cotton fabrics and embroideries:—Plain mull,
figured cambric, plain and figured curtain-gauze.
Curtains in figured mull, figured nansoo stripes, em-
broidered jaconet stripes.

Fine embroidered handkerchiefs of linen.

57 HEYBIG, J. G., & Co., *Plauen*—Manufacturers.

Cotton goods for curtains:—Gauze with borders, figured.
Gauze, with borders à jour. Figured damask. Plain mull.
Cambric. Jaconet.

[This very important branch of Saxon industry, the
cotton manufacture, has its seat in that part of the king-
dom called the Voigtland; the centre of it is Plauen,
where, and in some little neighbouring towns, the merchant-
manufacturers reside. All the goods are woven by hand-
weavers on Jacquard and embroidering looms, in their own
houses; many thousands of them are at work in the towns
and villages of the country. The patterns for the figured
goods are procured by the merchant-manufacturers. The
goods embroidered by hand are chiefly worked by girls.
The bleaching, dressing, and finishing of the goods are
done in the establishments of the manufacturers, or in
establishments erected for that purpose.]

58 KRAUSE, C. G., & Co., *Plauen*—Manufacturers.

Embroideries:—Figured jaconet; embroidered mulls;
figured and coloured garnitures.

59 MAMMEN, F. A., & Co., *Plauen*—Manufacturers.

Embroideries in mull, half cambric, jaconet, and linen
cambric. Capes and handkerchiefs, tamboured, embroi-
dered with the needle and with the loom.

60 SCHMIDT, G. F., & Co., *Plauen* (Agents, Ullmann,
Hirschhorn, & Co.)—Manufacturers.

Embroideries on jaconet, silk and cambric, done with
cotton and silk. A set of furniture; easy chair, pillow
and cushions embroidered à la Française; footstool;
window curtains with fringes; wall basket; table cover;
shades; letter case; pincushion, embroidered in the
French style.

61 MEINHOLD & STOFFREGEN, *Plauen*—Manufacturers.

Embroideries:—Muslin curtains, rose and white (broché
brodé), new patterns worked with the Jacquard loom;
gauze curtains, white (broché), worked with the Jacquard
loom; embroidered (with the needle) linen handkerchiefs;
mulls, plain and figured.

62 SCHNORR & STEINHAUSER, *Plauen*—Manufacturers.

Embroideries in mull, French, and Scotch cambric and
net. Pair of sleeves of mull in the pagoda fashion;
embroidered collars; cambric collars à l'Anglaise; guipures
of net work; chemisettes of mull, à la Duchesse, à la
Marie, à l'amazone; cambric pocket handkerchiefs, Eng-
lish embroidery; pocket handkerchief of French cambric;
morning dress of Scotch cambric; robes of mull; pillow
of French cambric.

63 GLAESER, FERDINAND, *Lengenfeld, near Auer*
—Manufacturer.

Cambrics, jaconets, and jaconets spotted,
qualities. Exhibited for cheapness, and for the
places in which they are manufactured.

64 HETZER, ERNST, & SON, *Auerbach*—Manu-

Fine white fancy cotton goods:—Gauze
curtains, jaconet, batist, and organdy.

65 BECK, G. F., *Hohenstein*—Manufacturer.

Cotton woven goods (piqué):—Coverlets, figured; red, plain, and rough. Piqué petticoats.

66 STOELZEL, G. F., & SON, *Eibenstock*—Manufacturers.

Embroideries in mull jaconet, linen cambric, and cotton gauze. Capes: festooned of jaconet, mull and cambric, guiped of cotton gauze, of net work, black and white chemisettes. Bonnets, of thread; of white net work; white, black, and coloured with rosettes and fringes, with gold; double black with barbe, of net work. Visites, pelerines, mantillas, and shawls, various. Laces: Brussels and coloured woollen.

67 PRIEM, EMILY, *Eibenstock*, Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Laces:—Bone laces; complete gown, volant. Embroidered; veil, corset, Bertha of crape, fancheon of black net work, mixed with yellow; fancheon of white net work.

68 FOERSTER, F., *Eibenstock* (Agent, H. Kohnstamm, 7 Union Court, Broad Street)—Manufacturer.

Embroidered capes, ruffles, bonnets, barbes, veils, shawls, and pelerines.

Chemisettes; embroidered handkerchiefs; Brussels and zephyr ladies' jackets; white blonde-lace barbe, &c.

Laces:—Zephyr bed laces, black bobbin, black silk laces, genuine blondes, and a long black barbe.

[This branch of industry occupies more than 20,000 hands in the mountainous parts of Saxony, called the Erzgebirge. All the articles are made by hand.]

69 DOERFFEL, C. G., & SONS, *Eibenstock* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturers.

Laces:—White thread; black silk lace insertion; and black silk laces.

70 KOESTER & UHLMANN, *Schneeberg* (Agent, E. & H. Blank, 10 Trump Street, King Street, Cheapside)—Manufacturers.

Laces:—Imitation, Valenciennes, and Brussels.

Embroideries:—Capes; Valenciennes; zephyr net work; ruffles; handkerchiefs of cambric; black silk half veils; Berthas and barbes; mantillas; and shawl of zephyr net work, &c.

71 SCHREIBER, F. A., *Dresden*—Manufacturer.

Laces and embroideries, imitation Brussels. Volants; bertha; barbe; echarpe. Embroidered scarf, in the ancient style; barbe, Bertha, &c. Embroideries: collars, ruffles, pocket handkerchiefs, &c.

72-83 The United Merchant Manufacturers: FRIEDRICH & SON, NACKE & GEHRENBECK, NEUBER, FRIEDRICH, SOLBRIG, FRANC, WEX & LINDNER, all in *Chemnitz*; GLAESER, J. S., jun., in *Schoenau*, near *Chemnitz*; HAERTEL, H. C., in *Waldenburgh*; PESTER, AUGUST, in *Limbach*; MEINERT BROTHERS, in *Oelsnitz*; LANDGRAFF GOTTFRIED, *Hohenstein*; WEBENDOERFFER, H., & SONS, in *Lichtenstein*; SEDLAG, GUSTAV, in *Koenigsbrück*, Producers. (Agents for Nacke & Gehrenbeck and Friedrich & Son, W. Meyerstein, 15 Watling Street. Agent for Wex & Lindner, A. Heintzmann, 17 Ironmonger Lane, Cheapside. For H. C. Haertel and G. Landgraff, D. Joshua, 34 King Street, Cheapside).

Men's and women's hose; half hose; men's and women's gloves; children's and boys' hose; half hose and jackets; gloves; drawers; and caps; woollen and cotton camisols; amazons, &c., brown, white and coloured. Women's hose: brown lace, white lace, and silk embroidered, &c.

[The articles here exhibited represent systematically one of the most important branches of Saxon industry. The manufacture of hosiery goods, principally in cotton,

but also in wool, linen, and flax, employs more than 30,000 looms, almost all of them being centralised near the towns of *Chemnitz*, *Penig*, *Waldenburg*, *Hohenstein*, and *Lichtenstein*, where all little places and villages abound with stocking-weavers. The total number of hands amounts to 45,000. The merchant-manufacturers that collect the products for sale (generally through the medium of factors) reside, most of them, at *Chemnitz*, *Limbach*, *Hohenstein*, *Lichtenstein*, *Oelsnitz*, and *Waldenburg*.]

84 BECKER & SCHRAPS, *Chemnitz*—Spinners and Printers.

Printed calicoes, fast colours. Ribbed cotton cloth, printed with eight steam colours. Cotton handkerchiefs, madder work. Cotton cravats and neckerchiefs, of various styles.

85 LOHSE, EDWARD, *Chemnitz* (Agent, W. Meyerstein, 15 Watling Street)—Manufacturer.

Damasks for furnitures in half silk, all silk, half wool, and cotton, named *Valentia*, imperial, goblin, berkan, president, rips, &c.; foulard lustring, half silk; plain and figured cotton cameleons; figured ginghams; table-covers and bed-cover of half silk, half wool, and cotton damask.

Glazed gingham; cravats, cotton jaconet; atlas, and half silk satin.

[The manufacture of cotton, wool, and silk-mixed damasks, and similar stuffs, occupies in *Chemnitz* and the neighbourhood above 2000 Jacquard looms, only a few of which are in factories, most of them belonging to hand-weavers working at home. To provide them with patterns and the material, as well as the finishing and dressing of the goods, is the business of the merchant-manufacturers residing at *Chemnitz*. This branch of the Saxon industry has made great progress during the last ten years.]

86 HOESEL, ROBERT, & Co., *Chemnitz*—Merchants.

Damasks:—Woollen purple, green, crimson. Silk and wool, two and three coloured brown, striped gobelins, and two coloured green. Cotton and woollen, scarlet, light-blue, brown, green, crimson, royal blue, nacarathe, &c. Table-covers.

87 ROEHRIG & ALBRECHT, *Chemnitz* (Agent, W. Meyerstein, 15 Watling Street)—Manufacturers.

Damasks:—Cotton, cotton and wool, cotton, wool, and silk, wool and silk, in various colours.

88 SEYFFERT & BREYER, *Chemnitz* (Agents, Gottschalk & Schroeder, 72 Basinghall Street)—Manufacturers.

Damask in different colours, named *Victoria* goblin, coloured goblin, coloured imperial; silk-striped; woollen and cotton, woollen, silk, and cotton. Table-cover, named goblin tapis.

89 VOGEL, WILLIAM, *Chemnitz* (Agent, D. Joshua, 34 King Street, Cheapside)—Manufacturer.

Stuffs:—Woollen, cotton, and silk mixed. Fancy articles, named *satin laine*, *satin laine rayé soie*, *satin cotton*, &c.; *damas mi soie velouté*, *royal mi soie*, *royal coloured*, woollen and silk mixed; woollen, silk, and cotton; woollen and cotton.

[The manufacture of worsted and mixed goods is concentrated, with few exceptions, in the towns of *Glauchau* and *Meerane*, and the neighbourhood. The goods are woven by hand-weavers in their own houses, and the business is carried on by the manufacturers, as is the case with the other branches of Saxon textile production. The number of looms engaged in that department of industry amounts to 10,000 and more.]

90 **TRUEMER & TOEPFFER, Chemnitz** (Agents, G. Harlin Rottman, & Co., 83 Hatton Garden) — Manufacturers.

Damaaks:—Silk, cotton, and wool imperial; cotton imperial; furniture in cotton and wool. Table-covers—patent, cotton, and cotton and wool. Fancy stuffs—robes, satin laine façonné.

91 **WINKLER & SOHN, Rochlitz**—Manufacturers.

Worsted stuffs from soft worsted yarn:—Satin de laine; maroquin laine; cuir de laine; popeline laine; velours laine; velours rayé; Cashemir, electa.

This exhibitor is the chief representative of the production of the finest goods from soft worsted yarn in Saxony. The articles are all woven by hand weavers in their houses.

92 **ZIEGLER & HAUSMANN, Glauchau** (Agent, J. Burroughs, 18 Addle Street)—Manufacturers.

Woollen stuffs (made from soft worsted yarn, mixed with silk); fancy articles named pout de soie, Amézon, Cashmir, Thibet, satin imperial, satin de Saxe, caesimier fin, &c.

This and the next eight exhibitors represent an important branch of the industry of Saxony, employing a large number of hand-loomers in Glauchau and the neighbourhood.

93 **KOHLER & SCHEDLICH, Glauchau** (Agent, Edward Buchler)—Manufacturers.

Stuffs, fancies, wool, cotton and silk mixed, named Ecosmia, Islyennes, Stradellas, Amiennes, Veloutés, Favoritas, printed Veloutés, &c.

94 **GUENTHER & SIMON, Glauchau**—Manufacturers.

Worsted stuffs—Valentia, Estells, Cachemir, and Armure.

95 **FACILIDES & CO., Glauchau** (Agent, W. Meynstein, 15 Watling Street)—Manufacturers.

Shawls—long, mosaïque, teutonia, zephyr, Cashmere, Nancy, &c.

96 **HECKER & TASCHE, Glauchau** (Agents, Cooper & Blaz, 41 Friday Street, Cheapside)—Manufacturers.

Various fancy stuffs, woollen and cotton, named Lombard, Montpensier, Cashmires, tartan, and trisina; and woollen, named pure laine, first and second quality, sprinkled; cameleon, woollen.

97 **SCHIFFNER & ZIMMERMANN, Glauchau**—Manufacturers.

Worsted stuffs:—Stalimene; Melpomene, all wool; Melpomene, half silk; Aqueline; Castiglione; Montauban; Stalimene, half silk.

98 **TRINKS, EDWARD, Glauchau**—Manufacturer.

Stuffs; wool, and wool and cotton mixed. Robes, Florida, and façonnée. Llama, for ladies' cloaks. Robes popeline; façonnée; and striped; Imitée.

99 **STAUSS & LEUSCHNER, Glauchau** (Agents, H. Oppenheim & Co., 15 Addle Street)—Manufacturers.

Fine worsted goods. All worsted, gros, mixed, Montpensier, thread warp, worsted weft. Llama, made with bread warp and woollen weft, and with silk warp and worsted weft.

100 **The WEAVERS' SCHOOL, Glauchau.**

Stuffs; wool, and wool and cotton; robe faquard; hâles, or shawls, woollen and silk.

Specimens worked by the scholars of this institution, which is supported by the manufacturers of Glauchau.

101 **GRUENER, F. W., Glauchau**—Producer.

Woollen stuffs (worsted soft yarns)—Thibets, superfine quality, different colours. Dyed by the exhibitor.

102 **GRAFF, J. F. & S. N. Meerana**—Manufacturers.

Woollen and half-woollen fancy stuffs—Montpensier, Cachemir, Paris, first and second quality. Châles, banages.

These and other articles exhibited represent a branch of industry rivaling those of Glauchau, and remarkable for the immense quantity of its productions and the cheapness of the articles.

103 **ENTRICH & STRAFF, Meerana**—Manufacturers.

Worsted woollen fancy stuffs; and mixed tartan, Cachemir, Montpensier, Union checks, and satiné.

104 **ENTRICH, HENRY LUDW. Meerana**—(Agent, A. Hoffmann, 17 Leimziger Lane, Cheapside)—Manufacturer.

Half-woollen stuffs—Angora mixed with silk. Montpensier, Napelaine, first and second quality. Muslin & Eton.

105 **GRAFF & NEUBAUER, Reichenbach**—Manufacturers.

Woollen stuffs and printed covers. Table-covers of cloth and Cashemir, and printed damask. Atlas. Superfine woollen atlas, made from soft worsted yarn, by Pottsch and Elert.

This and the next exhibitor represent a branch of Saxon industry peculiar to Reichenbach and its neighbourhood, producing good and cheap articles for use.

106 **SEIFELT, JOHN & CO., Reichenbach**—Manufacturers.

Woollen fancy stuffs and printed shawls. Cashmere. Llama. Victoria shawls, printed in different colours and patterns.

107 **LEHMANN, C. G., Borsbrunn, near Roswein** (Agents, G. Stohak & Schroeder, 72 Basinghall Street)—Manufacturer.

Woollen and mixed stuffs:—Llama-flannels of different colours, and plaid patterns for mantles; buckskin, entirely woollen, in water, pepper and salt; swan-skin for shirts and chemises, with cotton-warp; baize, with cotton-warp, for pattens, striped, quarried and striped with borders.

108 **BOETTIGER, H. G. F., Crimnitzschau**—Manufacturer.

Woollen stuffs, viz., cassinet, green, blue, brown, black, and mixed. Tricot cora. Double cassinet black; and mixed. Cashmere.

The manufacture of cassinets, elastics, satins, buckskins, and similar articles, forming the transition to the clothing manufacture, is almost concentrated in Crimnitzschau. The goods, with few exceptions, are done by hand-weavers. The spinning, dressing, and finishing machines, sometimes also the dyeing-houses, are in the establishments of the manufacturer.

109 **BURKHART, H. TH., Crimnitzschau**—Manufacturer.

Woollen stuffs. Winter and summer elastics, and cassinet mixed.

110 **COLLEL, FREDERIC, Crimnitzschau**—Manufacturer.

Woollen stuffs—cassinet, summer satin, and winter buckskin.

111 **HUEFFER, H., Crimnitzschau**—Manufacturer.

Woollen fancy stuffs, for paletots and trousers. Buckskin, of various qualities, for summer and winter. Grey and green cassinets.

112 **HELLING, O., & CO., Crimnitzschau** (Agents, Barthelmes and Backup, 28 Swan Chambers, Gresham Street)—Manufacturers.

Woollen stuffs—Summer and winter elastics.

- 113 KIRSTEN, C. W., *Crimnitzschau*—Manufacturer.
Woollen stuffs; cassinet, and summer buckskin.
- 114 KAUFFMANN, C. H. & SON, *Crimnitzschau*—Manufacturers.
Woollen stuffs. Zephyr, deep scarlet; Peruvienne; paletot; winter and summer elastics; summer-satin, and cassinet.
- 115 MUELLER & CO., *Crimnitzschau*—Manufacturers.
Woollen stuffs; summer and winter buckskin.
- 116 OEHLER BROTHERS, *Crimnitzschau*—Manufacturers.
Woollen stuffs. Cassinet of different colours; black doeskin; satin, drab-colour; glacé.
- 117 SPENGLER, CHARLES, *Crimnitzschau*—Manufacturer.
Woollen stuffs. Winter buckskin.
- 118 MATTHES, C., jun., *Zschopau, near Chemnitz*—Manufacturer.
Cassinet, woven on power-looms.
[The manufacture of damask and figured woven goods, mixed of cotton, wool, and silk, occupies many thousand hands and Jacquard looms in Chemnitz and its neighbourhood.]
- 119 ZSCHILLE, F., & CO., *Grossenhain* (Agents in London, Barthelmes & Backup, 28 Swan Chambers, Gresham Street)—Manufacturers.
Buckskin, of various patterns. Satin, black and light blue. Doeskin, &c.
- 120 SCHRGEER, F. W., *Oschatz* (Agents in London, Barthelmes & Backup, 28 Swan Chambers, Gresham Street)—Manufacturer.
Satin, bronze and green; cassimere, bronze and olive; Duffel cloth, black; black satin.
The pieces, No. 1267, 1250, and B 99, are made by C. F. Kunze, Oschatz.
- 120A KUNZE, G. F., *Oschatz*—Manufacturer.
Specimens of bronze and green satin, and black duffel-cloth.
- 121 BERNHARD, WILL., *Leisnig*—Manufacturer.
Woollen stuffs, buckskin for paletots and great-coats, calmucs, great-coats, &c.
- 122 HERRMANN, F. G., & SON, *Bischofswerda*—Manufacturers.
Coloured cloths of finest quality. Black cloth of fine quality.
[The following exhibitors are placed according to the fineness of their goods. The clothing manufacture of Saxony, employing more than 8,000 men and 4,000 looms, has its seat in a number of little towns, where the weavers are associated in companies or guilds. The spinning, dressing, shearing, fulling, and finishing machines are sometimes collected in the establishments of single manufacturers; but not unfrequently the companies keep their own fulling machines. The dressing and finishing is in some cases in the hands of a distinct guild of cloth-dressers and finishers. For the last ten years this branch has made essential progress. The principal centres of trade are Bischofswerda, Camenz, Grossenhain, Oschatz, Leisnig, Dobeln, Rosswein, Werdau, Kirchberg, Lengenfeld. Each of these towns produces certain classes of clothes, and the order of towns and exhibitors in the catalogue descends from the finer sorts to the coarsest and cheapest.]
- 123 KOBLOCK, H. M., *Bischofswerda*—Manufacturer.
Cloths of thin quality; olive, bronze, and invisible.
- 124 GROSSMANN, CHE. G., *Bischofswerda*—Manufacturer.
Superfine cloth—black, clare bronze, olive, dark green, clare green, and blue.
- 125 GROSSMANN BROTHERS, *Bischofswerda, I and New York*—Manufacturers.
Cloth for the United States market, in eleven qualities and colours, woven by E. E. Bernhardnig, dressed and made up by the exhibitors.
- 126 MEISSNER, T. F., *Bischofswerda*—Manufacturer.
Specimens of cloths of a fine black.
- 127 MOERBITZ, C. G. E., *Bautzen*—Manufacturer.
Cloths, coloured and unfinished.
A tableau showing the whole process of manufacture, from the raw wool to the finished cloth.
- 128 FIEDLER, ADOLPH D. GOTTLIEB, *Oederau* (in London, Charles Holland, 41 Circus)—Manufacturer.
Fine black cloth, and light cloth for summer.
- 129 MEISSNER, F. T., *Grossenhain*—Manufacturer.
Cloths thin black; coloured, olive and black and bronze.
- 130 MEISSNER, F. A., *Grossenhain* (Agents in London, Barthelmes & Backup, 28 Swan Chambers, Gresham Street)—Manufacturer.
Cloth, black, brown, and green; best and qualities.
- 131 JUNGHANS, J. G., *Grossenhain*—Manufacturer.
Cloths, black and coloured, of different prices.
- 132 CASPARI, J. F., *Grossenhain* (Agents in London, Barthelmes & Backup, 28 Swan Chambers, Gresham Street)—Manufacturers.
Cloth—black, blue-green, wool-black, and bronze.
- 133 BUCHWALD, REINHARD, *Grossenhain*—Manufacturer.
Black and brown cloth, of middle quality.
- 134 JAEHNIG, W., *Grossenhain*—Manufacturer.
Cloths, black, brown, and blue.
- 135 PRESSBICH, ERNST, & SON, *Grossenhain*—Manufacturers.
Various cloths. Thick and thin black.
- 136 MEISSNER, E., *Grossenhain*—Manufacturer.
Cloth, pensée and blue.
- 137 MEISSNER, M., *Grossenhain* (Agents in London, Barthelmes & Backup, 28 Swan Chambers, Gresham Street)—Manufacturer.
Cloth, green and olive.
- 138 ZSCHILLE BROTHERS, *Grossenhain* (Agents in London, Barthelmes & Backup, 28 Swan Chambers, Gresham Street)—Manufacturers.
Cloth, first quality, blue and black; second, black; thin cloth, for the United States market, and coloured.
- 139 HERRMANN, W., *Leisnig*—Manufacturer.
Cloths, of different qualities.
- 140 REICHEL, CHRIST. FRED., *Rosswein*—Manufacturer.
Coloured cloths. Dahlia, pensée, green, olive, scarlet, mineral blue, and black.

SAXONY.

WOLDT, FERD., Lengefeld (Agents, Barthelmes Pickup, 28 Swan Chambers)—Manufacturer. Cloth.

WOLF, C. A., Kirchberg, near Zwickau—Manufacturer. Different qualities and prices, crimson, scarlet, black.

WOLF, J. G., sen., Kirchberg—Manufacturer. Black, scarlet, crimson, various qualities.

WOLF, FERD., Kirchberg—Manufacturer. Cloth, crimson, Turkey red or deep scarlet, and blue.

WUNGER, C. F., Kirchberg—Manufacturer. Scarlet, black, mixed, indigo blue, dark green.

WUNGER, C. G., Kirchberg—Manufacturer. Cloth of common quality, different colours.

WUSE, F. W., Grossenhain (Agents, Barthelmes Pickup, 28 Swan Chambers)—Manufacturer. Woollen stuffs for waistcoats. Chemical blue, black, and printed on coloured ground.

WYK & HEYNIG, Glauchau—Manufacturers. Articles:—Sofa carpet with figures; carpet pockets; and pockets with flaps and leather bot-

YACK, HENRY, Glauchau—Manufacturer. Shoes and carpet goods:—Upper parts of shoes, cut in the latest fashion; pockets for children.

YATZ, PHILIPP, Leipzig—Merchant and Manufacturer. Bags. Velvet or velvetees; plain; embossed; handles; with handles of mother-of-pearl. Trunks. Embossed; velvet, with small artificial

YUBNER, CARL, Rosnein—Manufacturer. Pocket; interlaced work of zephyr worsted

YENSTUCK & Co, Annaberg (Agent, C. H. Treibmann)—Manufacturers. Linen:—white linen and black worsted. Belts:—ribbands with flattened gold and silver wire.

YENEL, EMIL, CHR. Annaberg (Agents, Conrad Ehrensperger & Co., 4 Laurence Pountney Place, Cannon Street)—Manufacturer. Silk laces, of different prices and qualities; thread in modern and ancient patterns and style.

YENEL BROTHERS, Annaberg (Agents, J. A. Hoffmann & Co.)—Manufacturers. Fringes—sewing fringes, black silk; black mottled mohair.

YEHMIG & SCHMIDT, Annaberg (Agents, Jonas Simonson & Co.)—Manufacturers. Button-makers' productions. Strings for curtains. Curtains of cotton, half silk and wool; loops for curtains for curtains.

YELIG'S WIDOW, & JUNCKER, Annaberg—Manufacturers. Button-makers' productions:—Ladies' buttons, with and without tassels. Strings for ladies' robes, with tassels. Ornaments for pipes. A garniture of insertion for ladies' dresses for furniture. Loops for cloaks and man-

156 **SCHUBERT, ERNESTINE, Annaberg**—Producer. Worked table-cover, on net lace, after designs invented and drawn by Mrs. Schubert.

157 **MUEHLENDERLEIN, C. F., Annaberg**—Manufacturer. Button-makers' productions:—Twisted fringes of half silk, wool and cotton. Loops, half silk. Chenille, all silk. Mohair laces. India-rubber galloons, of silk, wool, and cotton.

[The button and fringe manufacture of Saxony is principally centralized in the towns of Annaberg and Buchholz. A very large number of persons, old and young, are dependent upon this manufacture, and some thousands of looms are engaged in different processes connected with it.]

158 **BACH, G. F., & SONS, Buchholz, near Annaberg** (Agent, C. H. Treibmann)—Manufacturers.

Fringes:—White cotton, ball, coloured ball, half-silk bullion, half net, half sewing, sewing silk fringes; a large number of different patterns.

Crêtes:—Half silk, worsted, and cotton crêtes.

Trimmings:—Half silk; 60 patterns.

Exhibited for cheapness and execution.

159 **HELWEG, HANS, Buchholz, near Annaberg** (Agents, Ullmann, Hiaschhorn, and Co.)—Manufacturer. Fringes:—White cotton, sewing and ball fringes.

160 **HILLMANN, FERD., Sebnitz, near Dresden**—Manufacturer.

Button-makers' productions:—Silk and half silk buttons. Cords and galloons, of silk and Ispahan, and of silk and genappe. Rich black silk buttons.

161 **ROELLER & HUSTE, Leipzig** (Agents, Gebhardt, Rottman, & Co., 83 Hatton Garden)—Manufacturers.

Oil cloths. Floor cloths, partly varnished; and oiled fustian.

Black oiled muslin; oil cloth sofa-mat; oiled fustian piano-cover; table-covers, with various designs and imitations; table-mats, &c.

The manufacture of oil cloths forms an important branch of Saxon industry, principally concentrated in Leipzig.

162 **QUAST, FREDERIC, Leipzig**—Manufacturer. Oil cloth; oiled fustian; round table covers; cornered table covers; floor carpets, double oiled.

163 **TEUBNER & Co., Leipzig** (Agents, Gottschalk and Schroeder, 72 Basinghall Street)—Manufacturers.

Oil cloth. Floor cloth; piano cover; table covers; oil fustian, bronze, printed, and imitation of wood; table mats; oil cloth, in imitation of marble and wood.

[The manufacture of oil-cloths is a very important branch of Saxon industry, centred almost entirely at Leipzig, and producing goods for the German market as largely as for foreign parts.]

164 **GOEHRING & BOEHME, Leipzig**—Manufacturers.

Oiled cloths:—Painted in gold and silver and in colours; round table cover of oiled fustian (tortoiseshell pattern); table mats, floor-cloth, linens and tickens for painters, and oiled cloths for hat linings.

165 **EISENKEL, I. C. C., Dresden**—Manufacturer.

Linens and tickens for painters, various lengths and colours. When extra width is wanted, the sewing is done in a way scarcely visible, and without injury to solidity.

166 WEICKERT, J. D., *Leipzig* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturer.
Cloths for pianos. Hammer cloths; damper cloths; red and green under-cloth.

167 MUEHLE, AUGUST, *Pirna*—Manufacturer.
Articles made of felt. Ladies' woollen shoes, fine; gentlemen's shoes, of plain felt; gentlemen's and ladies' slippers.

168 FISCHER, C. F. A., *Bautzen*—Manufacturer.
Specimens of paper. Plate paper, for stone and steel plates. Printing paper. Tissue paper, white and rose-coloured. Writing paper. Drawing paper, worked on the endless machine, and sized with vegetable glue. Vegetable paper, for counter-drawing. Papers for documents, notes, and bank-notes. Gigantic millboard for waggon manufactories.

[This exhibitor's two factories unitedly contain 3 endless machines, 24 hollanders, 2 satining machines, moved by 5 turbines and 6 water-wheels of 150 horsepower, employ about 200 men, and produce about 1,300,000 lbs. of paper a-year.]

168a HIETEL, J. A., *Dresden*—Manufacturer.
Seven tableaux, embroidered with hair and silk, on silk fond; viz., the portraits of Her Majesty of England and His Majesty of Saxony, the flags of all nations, &c.

169 GOETZE, HERMANN, *Leipzig*—Manufacturer.
Raw German hair, called Brabant hair, of various lengths and colours, including a weft of two yards and a half. Natural hair, completely purified and prepared for use, applicable for curls, &c., with specimens of the same hair dyed. Hair, artificially dressed. The exhibitor states that he employs more than seventy men in the preparation of human hair for sale.

[The peculiar characters of this substance, which are the same in kind, though different in degree, in all cases, are its resistance to decay, its elasticity, and its strength. Chemically, hair consists of the usual organic elements—carbon, hydrogen, oxygen, and nitrogen, united with several earthy and metallic oxides. Human hair is employed to some extent in ornamental work.—R. E.]

170 KINDERMANN A., *Buchholz* (Agent, C. H. Triebmann)—Manufacturer.
Papier-maché:—Groups of animals of various sizes and execution.

171 FEISTEL & SON, *Aue, near Schneeberg*—Manufacturers.
Snuff-boxes of tortoiseshell; and metal with paintings. Ladies' box, with silver arabesques. Scottish boxes. Draught-board. Ivory box, with painting.

172 ROCKHAUSEN, WILLIAM, *Johanneorgenstadt*—Manufacturer.
Fancy-boxes for toilet; travelling case of rosewood; box for counters; boxes of mother-of-pearl; cigar-box, &c.

173 PAPPERITZ, JOH. FR., *Dresden*—Manufacturer.
Saddlers' goods:—Saddles in the English style, flat, wadded, and covered with hog-skin, complete. Bridle—the leather being pierced, and the buckles covered with leather.

173a HAUSSMANN, LUDWIG, *Dresden*—Manufacturer.
A pair of complete horses' harnesses, with collars, brown round reins, counterholds, silver plated buckles, steel bridle.
Three bridles, of different descriptions. Ten whips.

174 The ROYAL SAXON MANUFACTORY OF CHINA, *Meissen, near Dresden* (Agent, Dr. Seyffarth, Royal Commissioner for Saxony)—Producer.

China. Royal blue vases, with portraits of Her Majesty the Queen of England and H.R.H. Prince Albert. Chandelier, with nine girandoles, coloured and gilt.

Camelia, in its natural state and colours, standing in a pot. Vase, after M. Semper's design.

Vase, on a pedestal, with figures after Watteau, with flowers and figures in relief.

Mirror-frame, with similar figures, painted in colours, with flowers in relief, richly gilt, with two girandoles.

Vases, painted with flowers and bronzed. Figures: a flute-player and a girl playing the guitar, &c.

Etagères. Dessert-dishes and plates, a pair of cups with the portraits of the King and Queen of Saxony. Coffee and tea services, &c. Figure, a girl feeding doves. Fruit-basket. Tea-table appurtenances. Tableau, the female lace-maker.

Six pieces with the armorial bearings of the kingdom of Saxony. Plate.

Busts: Danaide, after Mr. Rauch; King of Saxony; King of Prussia; Madonna; Socrates. Figure, Gany-mede, after Thorwaldsen. Shades.

China vessels, for the use of chemists and apothecaries.

[The first European manufactory of porcelain was established at Meissen, under the auspices of Augustus II., Elector of Saxony and King of Poland. Böttcher, an alchemist, having made some crucibles which assumed the character of Oriental china, appears to have originated the establishment. His first ware was made from a red earth found at Meissen, and he did not produce white porcelain until 1709, when he used the *kaolin* (china-clay) of Aue, near Schneeberg, for his pottery. From that period the Meissen porcelain has been highly esteemed, and the manufactory has been constantly under the direction of the Government, who have employed the most skilful artists and workmen selected from all parts of Europe.—R. H.]

175 ADLER, CHARLES, *Königsbrück*—Manufacturer.

Vessels of clay:—Soup-urn, coffee-pots, flower-vase, tea-pot, and milk-pots.

Specimens of children's playthings.

176 BUCKER, H., *Dresden*—Designer and Painter.

Paintings on china:—Brooches of painted china chased in bronze; small china paintings of various kinds after classical pictures.

177 WALTHER, GUSTAV, *Dresden*—Painter.

Enamel paintings on china, copies from classical original; plates for a bracelet and brooch.

178 BROCKHAUS, F. A., *Leipzig*—Manufacturer.

Printed books. A collection of 356 volumes, all printed in the year 1850, in the office of the exhibitor, in elegant covers.

179 BARTH, AMBROSIUS, *Leipzig*—Proprietor.

Ornamental typographical works. Minstrels of Germany, edited by Herr Von der Hagen, printed on parchment; the vignettes, as well as the initials, painted in gold.

Ancient Egypt, by Mr. M. S. Schwarze, printed in twenty-seven languages, being the first instance of Egyptian hieroglyphics having ever been executed in print; it has been done by means of more than 3,000 stamps cut for this purpose. Talmud Babli; Babylonian Talmud in Hebrew, with German translation, and the Commentaries of Raschi and Josephoth, edited by Dr. E. M. Pinner, vol. i.



201. A LARGE VASE, IN PORCELAIN. FROM THE ROYAL PORCELAIN MANUFACTORY, DRESDEN.
THE SMALLER FROM THE BERLIN PORCELAIN MANUFACTORY.
ZOLLVEREIN.



HELD, F. B., *Leipzig*—Printer.

A new art of printing. A picture in polychromism of types.

D & SOSS, *Dresden*—Manufacturers.
Works of coloured printing.

DR. GUSTAV, *Dresden*—Inventor and
Manufacturer.

Letter foundry:—Complete set of the latest setting types; music-book done with types, English steel, in gilt frames; musical text-plates with types, cast and cut in English steel.

Process of printing with lately-invented stencils on Mr. Gabelsberger's principle, in gilt.

DR. F. H., *Dresden*—Engraver.

Works with specimens of several engravers' works. Works in execution.

184 The ROYAL SAXON MILITARY PLAN OFFICE,
Dresden—Producer.

The three first numbers of the engineers' map of the kingdom of Saxony, exhibited for execution.

185 KIFTZ, THEODORE, *Leipzig*—Producer.

A relief, in ivory (the portraits of Clara and Robert Schumann).

186 RIETSCHEL, Professor, M.R.A.F.A., *Dresden*—
Sculptor.

Sculptures:—Christ and angel, in relief, Carrara marble. Cupid mounted on the back of a panther, in relief, in Carrara marble.

Plaster image of the Virgin.

187 BUETTNER, GUSTAVUS, *Dresden, Saxony*—
Manufacturer.

Three electrotype copies of classical shields.

188 KOGLER, HENRY, *Dresden*—Producer.

A signet, in form of a vase, ground out of one piece of rock crystal.





Agents in London, Messrs. BRAND & SCHIEDMAYER, 6 Pinner's Hall, Old Broad Street, City.

THE number of exhibitors representing this State is about 110; the contributions of some of these form one of those features of the Exhibition which are not likely to be soon effaced from the memory. The conspicuous group of Stuttgart horses, the models in plaster of a similar group in Carrara marble, placed in the Royal Park at that place, must be reckoned among these; and the beautiful specimens of the art of the taxidermist, displayed in the wonderful and mirth-exciting groups of stuffed animals, and in those made up to imitate the painted conceptions of great artists, have likewise a claim to the same character. Specimens of raw materials and produce are exhibited, and include mill-stones, colours, dyes, preserved fruit, &c. Among the horological and philosophical instruments are several of improved construction. Perhaps more interest will be considered to attach to the Dutch clocks, exhibited as extraordinary specimens of economy in production, than to the more elegant but also more costly instruments of precision. Some musical instruments are also shown. The textile manufactures in cotton, wool, and fleece, are represented, but not to a large extent. The production of toys, and miscellaneous articles of fancy ware, of dolls, &c., forms an important department of industry in this State, and a considerable number of exhibitors have presented their productions of this class for exhibition. A number of specimens of cutlery and of leather and paper manufactures are shown. In all these articles—and, as a general remark, in those of every foreign state,—it requires but a small degree of attention to detect those peculiar differences in the products, both as to character and style, which indicate the national prevalence of taste, influencing, as it must always do, the method of manufacture in a small degree, but the manufactured article itself altogether.—R. E.

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| <p>1 ZELLE, FRED, <i>Neckartenzlingen, near Stuttgart</i>.
Specimens of stone taken from the quarries of the exhibitor, particularly adapted for millstones.</p> <p>2 BONZ & SON, <i>Boeblingen, near Stuttgart</i>—Manufacturers.
Kreosote produced from common tar. Iodide of potassium and other chemicals.
[The remarkable chemical product, kreosote, was discovered by Baron Reichenbach. It is obtained by a somewhat operose distillation of tar in a metallic vessel. It has several valuable medicinal qualities; it is also used in curing provisions.—R. E.]</p> <p>3 BREUNINGER & SON, <i>Kirchheim, Teck</i>—Manufacturers.
Ultramarine. Exhibited for the beauty and brilliancy of the colour and its cheapness.</p> <p>4 JOBST, FREDERIC, <i>Stuttgart</i>—Manufacturer.
Sulphate and other compounds of quinine, kali hydroiodinic, of great purity.
[Sulphate of quinine is obtained in largest quantity from yellow cinchona bark. By careful chemical manipulation it crystallizes in beautiful needle-like forms. Its medicinal value is that of a febrifuge tonic.—R. E.]</p> | <p>5 LEUBE BROTHERS, <i>Ulm</i>—Manufacturers.
Hydraulic chalk cement, hardening under water in a few minutes.</p> <p>6 SIEGLE, HENRY, <i>Stuttgart</i>—Manufacturer.
Carmine, Munich carmine-lac, madder-lac, and different azure colours; a yellow colour for confectioners, adapted for such purposes on account of its innocuous qualities.</p> <p>7 ABT, W., <i>Esslingen</i>—Manufacturer.
Yellow colour, which, consisting entirely of innocuous substances, is adapted for the use of confectioners.</p> <p>8 BREUNING, FRED., <i>Möhringen, near Stuttgart</i>—Producer.
Samples of dried fruits: bilberries. Used as an astringent.</p> <p>9 SCHMIDT, W., <i>Calmbach</i>—Producer.
Samples of dried fruits: bilberries.</p> <p>10 FICKER, C., <i>Kirchheim Teck</i>,—Producer.
Samples of dried fruits: plums, pears, apples, prunes, and cherries without stones: for dessert.</p> <p>11 NOERDLINGER, PROFESSOR, <i>Hohenheim, near Stuttgart</i>.
Various collections of all kinds of wood, showing their relative qualities for the use of agriculturists.</p> |
|---|--|

collections of insects, especially those which infest the
the

SCHOETTL, GEORGE JAMES, Ebbhausen, Nagold
—Manufacturer.
beckle, or flax comb.

WOLFF, FRED. A., Heilbronn—Manufacturer.
stilling steam apparatus for fluids with new refrige-
: Distilling and cooking apparatus for the use of
iste and others.
pparatus for soldering lead by means of atmospheric
nd hydrogen gas, generating a most intense heat ;
al plates of lead of various thickness soldered by
is of the apparatus ; graduated vessels, for measuring
s accurately.
is apparatus is represented in the illustration on
next page.

The presence of hydrogen gas unquestionably facili-
s and expedites the process of soldering. When com-
d in certain proportions with atmospheric air it forms
xplosive mixture, but with proper precautions it may
safely burnt at the end of a small jet, and it gives out
intense heat when so employed.—R. E.]

KOHL, G. HENRY, Stuttgart—Manufacturer.
ilt sabre, with modern ornaments.
oman sword, executed after drawings of the time of
stantine the Great, with Christian emblems.
ilt cutlasses and daggers, in various styles.

ROYAL GUN MANUFACTORY, Oberndorf—
Manufacture.
um for infantry, rifle with bayonet, and common rifle,
de of cast steel.

HALLER, FS., Schweningen—Manufacturer.
Dutch clocks with weights of various sizes ; alarm
cks, &c. Exhibited for their extraordinary cheapness.

BACHER, AUGUSTUS, Stuttgart—Manufacturer.
A novel escapement for watches, constructed without a
ance-wheel ; a watch on this principle ; seconds-watch,
h compensating escapement, and maintaining power,
hout distinct second-work.
A seconds-watch going for a week, constructed with five
cells only ; the hours are indicated by numbers appear-
: on the hands of the watch ; an ivory watch, con-
ected entirely of ivory ; a watch with lever escapement,
king on a plate of steel.
Chronograph constructed on a new principle, distin-
shed by the great accuracy with which any velocity
y be measured.

An escapement is a mechanical contrivance for trans-
-mission, at equidistant intervals of time, of the maintain-
-power of the watch or clock to the regulator, and its
-ce is to allow a tooth of the wheel, with which it acts,
-scape or pass onwards at such intervals of time as are
-asured by the regulator.—J. G.]

HOLCH, WILLIAM, Hall—Manufacturer.
regulator, going eight days, in mahogany case, silvered
, and jewelled escapement.

STOSS, V., Ulm—Clock Manufacturer.
stent small church-clock, striking hours and quarters,
a new escapement, intended to prevent wind and
restuous weather from injuring the hands. An eight-
-clock.

DREUDONNE & BLAEDEL, Stuttgart—Manufacturers.
and pianoforte with double action ; cottage piano-

21 **DOERNER, F., Stuttgart—Manufacturer.**
Grand pianoforte in rosewood ; square pianoforte.

22 **LIPP, RICHARD, Stuttgart—Manufacturer.**
Square pianofortes. The hammers are fitted up with a
new and more durable kind of felt, intended to assist in
producing greater clearness of sound.

23 **SCHIEDMAYER, J. L., & SONS, Stuttgart—Inventors**
and Manufacturers.
Grand pianoforte, in rosewood, with newly-invented
patent double action.
Square pianoforte, in mahogany.
Cottage pianoforte, in nutwood, decorated and orna-
mented with original wood carvings.

24 **HELWERT, JAMES, Stuttgart—Manufacturer.**
New bassoon, with nineteen keys, of improved con-
struction.

25 **REXER, CHARLES, Stuttgart—Manufacturer and**
Inventor.
Pair of kettle-drums for orchestras, which are tuned on
a new and simple plan. A large drum. A military drum.

26 **KINZELBACH, T., Stuttgart—Manufacturer.**
Improved diastimeter for the use of the army, 1½ inch
object-glass, 2¼ inches focus, with two parallel wires
moveable at the same time, and at equal distances from
the centre to the extent of the field of view, along a scale
divided to minutes. A table is engraved upon the front
plate near the eye-glass, which contains the various amounts
of minutes and quarter minutes, with the corresponding
distances of infantry or cavalry in paces.

Surveying cross, with a graduated limb and vernier
reading to five minutes ; intended for use in hilly countries.
Improved Wollaston's goniometer, with an auxiliary glass
for more conveniently measuring off the angles of prisms
and crystals. Silver hydrometer, constructed to measure
the density of such liquids as wine, beer, or milk.

Telescope of 23¼ inches focal length, and 2¼ inches
object-glass, mounted equatorially, and furnished with
divided arcs for right ascensions and declinations ; endless
screw motion ; a level ; adjusting screws ; terrestrial and
astronomical eye-pieces.

27 **HECHT & ARNOLD, Reutlingen—Manufacturers.**
Toilinetts and valentias, exhibited for cheapness and
quality of material.

28 **KOLB & SCHUELE, Kirchheim—Manufacturer.**
Coloured cotton quiltings ; green and blue cotton came-
leon ; coloured canvas, gingham, and dimity bed-stuff ;
white cotton tricot ; green cotton umbrella stuff, and grey
cotton stuff.

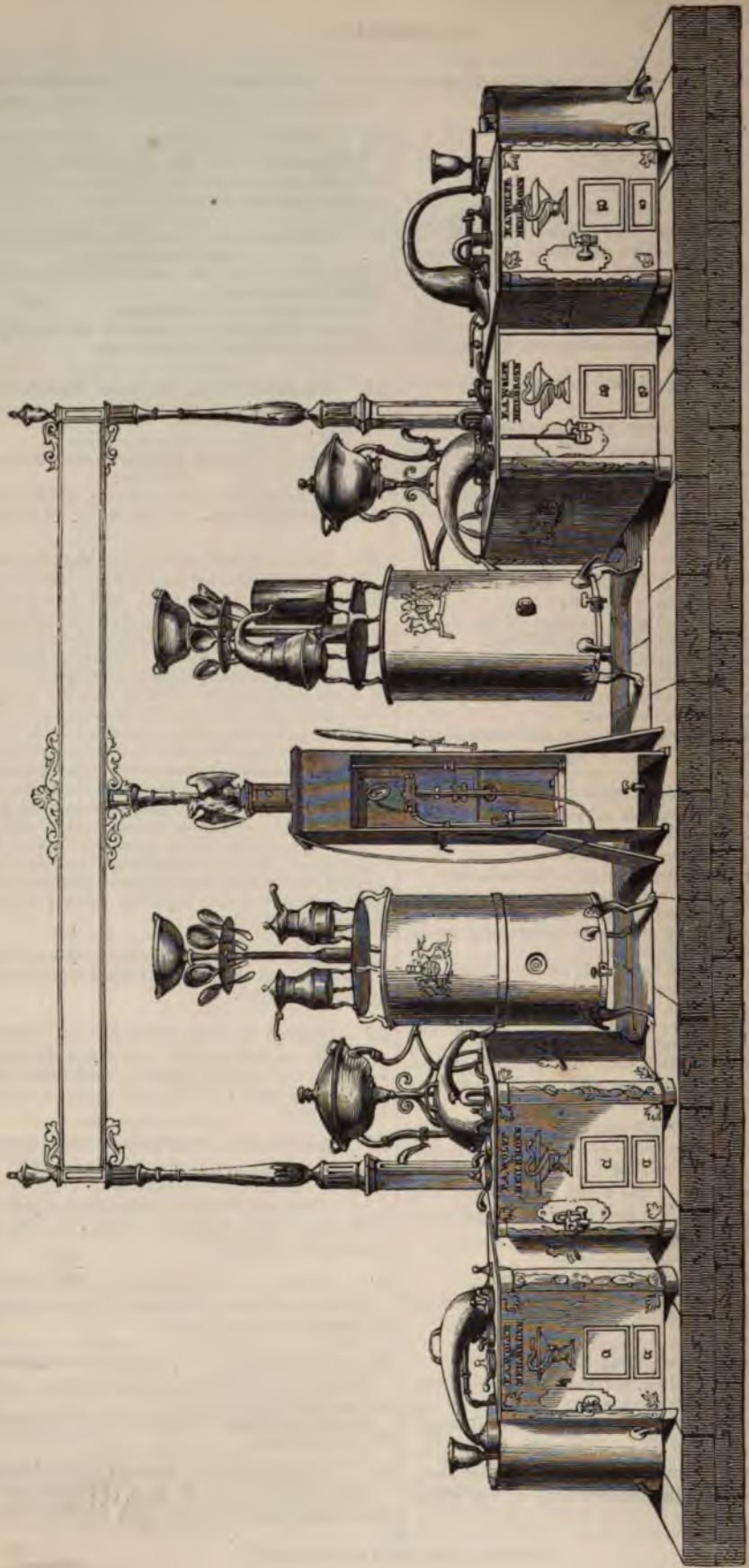
29 **WEIGLE, J. J., Ludwigsburg—Manufacturer.**
Quiltings and toilinetts of various patterns.

30 **SCHILL & WAGNER, Calw—Manufacturers.**
Woollen cloths ; black satin cloth ; flannels of various
qualities and colours.

31 **FINCKH, JOHN G., Reutlingen—Manufacturer.**
Several specimens of woollen cloth, distinguished by
the brilliancy of their dye.

32 **SCHOENLEBER, AUG., Bietigheim—Manufacturer.**
Woollen trouser stuff, new and elegant patterns for
summer and winter wear.
Several specimens of worsted yarn in various numbers,
died and undyed.

33 **FABER, CHARLES, Stuttgart—Manufacturer.**
Damask table-covers of linen, of various patterns and
sizes ; small desert napkins with fringes ; brocaded tri-



Wolf's Chemical Apparatus.

coloured silk furniture stuffs. The latter are exhibited on account of their fine and heavy quality, and particularly to show the silk industry of the country, the raw material being entirely produced in royal establishments.

- 34 LANG, A. F., *Blaubeuren*—Manufacturer.
Samples of bleached linen, and linen handkerchiefs.
- 35 MANUFACTORY OF LINEN YARN, *Urach*. (Messrs. Escher, Wyss & Co., Zurich, and M. Schlumberger & Co., Gubviller, Proprietors.)
Samples of linen yarn.
- 36 SEEMANN, C. & H., *Stuttgart*—Manufacturers.
Samples of bleached linen of machine yarn, made up in the Irish manner, numbers of yarn 60 to 160; made up in the Dutch manner, numbers of yarn 70 to 400; of unbleached linen drills, numbers of yarn 30 to 60; and white linen drills, numbers of yarns 30 to 60; printed cambrics.
- 37 BANTLIN, G. D., *Reutlingen*—Tanner.
Specimens of calf leather; upper-leather leggings ready cut out.
- 38 ECKHARDT, F. M., *Ulm*—Manufacturers.
Black varnished leather, exhibited for its softness and tanning, and peculiar varnish.
- 39 REICHOLD, GEORGE, *Stuttgart*—Manufacturer.
Fancy leather goods: portfolios, albums, porte-monnaies, cigar and writing-cases.
- 40 SCHENCK, E. G. & Co., *Stuttgart*—Manufacturers.
Fancy leather goods: portfolios, books, albums, porte-monnaies, cigar and letter cases, &c.
- 41 SCHAEUFFELEN, G., *Heilbronn*—Manufacturer.
Coloured and white pasteboard.
Tissue paper, white, and in brilliant colours.
Letter-paper, exhibiting its quality as regards thinness, compactness, and clearness.
Post paper, white and coloured, in bright, lively colours, exhibited as thin, compact, and clear. The name of the manufacturer is marked in the substance by a patent contrivance for machine paper.
By a contrivance recently introduced by the exhibitors any name may be marked in the substance.
- 42 KAEMMERER, C., *Stuttgart*—Manufacturer.
Portfolio, containing pasteboard for the use of painters, of both rough and smooth surface.
- 43 FAULHABER & LEUBE, *Ulm*—Chemical Factors.
Rheumatic pitch-plaister: may be rolled up without sticking together, or rubbing the composition off its surface.
- 44 RAUCH BROTHERS, *Heilbronn*—Manufacturers.
Fancy paper. This paper, by a process invented by the exhibitors, is coloured on both sides of a single sheet of different shades without pasting two sheets together.
- 45 VEIHEL, G., & Co. *Stuttgart*—Manufacturers.
Fancy paper, and enamelled cardboard.
- 46 KOHLER, F., *Goepfingen*—Manufacturer.
Printed woollen vestings. Printed linen handkerchiefs.
- 47 OTTO, HENRY, *Nurlingen*—Manufacturer.
First, second, and extra Turkey-red yarn.
- 48 ZAIS, WILLIAM, *Cannstadt*—Manufacturer.
Three pieces of Turkey-red printed cotton stuffs of various patterns.
[Turkey-red is a beautiful dye produced from madder. The colour is often remarkably influenced by the presence

or absence of calcareous matter in the water. A certain quantity appears to be essential for the production of brilliant colours.—R. E.]

- 49 NEUBURGER & SONS, H., *Dietenheim, near Ulm*—Manufacturers.
Embroidered curtains, in tasteful and elegant patterns.
- 50 ROBECK, CHARLES, *Nurlingen, near Teck*.
Cards, scollops and "entre deux." Knitting work.
- 51 TANNER, THEOPHILUS, *Stuttgart*—Designer and Inventor.
Designs for tapestry; printed furniture materials; and large carpets.
- 52 VAN ZWERGER, DEFFNER, & WEISS, *Ravensburg*—Manufacturers.
Curtains, white and red striped; and of embroidered net and muslin.
- 53 HILS, HAAS, & Co., *Schramberg*—Manufacturers.
Knitted woollen hosiery, petticoats, hose, stockings, men and women's cord or lace shoes, &c.
- 54 REHM, F. F., *Reutlingen*—Manufacturer.
Woolen and cotton hosiery goods. Laces and collars, called "eternelles." Knitting work, &c.
- 55 BOELSTERLI, CHARLES, & Co., *Stuttgart*—Manufacturers.
Tools of every description, for the preparation and carving of all kinds of wood.
- 56 GOEBEL, GODFREY, *Stuttgart*—Manufacturer.
Tools for the preparation of wood.
- 57 DITTMAR BROTHERS, *Heilbronn*—Manufacturer.
Patent razors and razor-strops. Penknives, paper-cutters. Wood, Circassians, Greek, and yataghan knives, daggers, hunting hangers, and stilettos. Garden knives and implements, &c.
- 58 HAUZEIN & SON, *Stuttgart*—Manufacturers.
A variety of scythes, as they are used in various countries.
- 59 BUEHRER, FRED., *Ludwigsburg*—Manufacturer.
Toys, representing various kinds of working utensils, in copper. Pastry moulds.
- 60 STOHRER, T. F., *Stuttgart*—Manufacturer.
Brass and steel wires; metal wire for the manufacture of paper. Metal wire gauze. Brass wire and horse-hair sieves. A drum.
- 61 WAGNER, CHARLES, *Esslingen*—Brazier.
Pastry moulds of various shapes and sizes.
- 62 REXER, FREDERICK, *Stuttgart*—Manufacturer.
Brass and steel wire. Metal wire for the manufacture of paper. Metal wire gauze. One pair of kettle drums, a large and a military drum.
- 63 ERHARDT & SONS, *Gmünd*—Manufacturers.
Bronze chessmen in a polished wood case. Game of chess with fixable figures. Various useful and ornamental articles.
- 64 FAIST & STEINHAUESER, *Schramberg*—Manufacturers.
Garnets cut in various sizes or shapes. The rough stones are imported from Bohemia.
[The garnet is an anhydrous silicate of alumina and of lime. Its colouring matter is iron. Garnets are found in great abundance in Bohemia, from whence they are largely exported.—R. E.]

65 **BRUCEMANN, P., & SONS, Heilbronn—**
Manufacturers.

Silver-plated tea-kettle, coffee and tea pots, cream jug, sugar-basins, trays, tea canister, fruit baskets and plates, salvers, étagères, sauce-pot, chandeliers, candlesticks, cups, &c.

Large decorated lamp used in churches.

66 **GROEBER, ALBERT, Riedlingen—Manufacturer.**

Fruit-basket in wrought silver, remarkable for the workmanship.

67 **LENZ, CHARLES, Gmünd.**

Silver spectacle frames.

68 **UECHTRIEZ & FAIST, Schramberg—Manufacturers.**

Crockery ware. Flower-pots in black enamel. Fruit-baskets or plates in green enamel. Entire table-service in white earthenware. Several tea-services, with prints, in black and blue colours.

69 **WASSEROTT, STAUD, Ravensburg—Manufacturer and Inventor.**

Gothic window in pointed architecture. Gothic rosette, window, and monument, of terra cotta.

70 **WIRTH, F., Stuttgart—Manufacturer.**

Dressing and writing table.

Wardrobe, with ornaments of wood carvings, modelled by the exhibitor.

71 **DEFFNER, CHARLES, Esslingen—Manufacturer.**

Iron flower-table; cigar-tray; writing-case; thrift-box; washing-tubs; sugar-box; working-baskets; chess-board; fruit-baskets; pictures; and coffee-trays.

Bird-cages in great variety.

Silver-plated speaking trumpet; and miscellaneous articles of hardware.

72 **RAU & Co., Göppingen—Manufacturers, Inventors and Proprietors.**

Various articles of japanned tin-plate and papier maché, several inlaid with mother-of-pearl. Plated metal articles. The laying-in of mother-of-pearl in japanned tin ware is claimed as new.

An ornamental japanned bird-cage and flower-stand. This object is represented in the adjoining illustration.

73 **ROMETSCH, CHARLES, Stuttgart—Inventor and Manufacturer.**

Patent metallic writing slates. These slates are prepared by a new invention of the exhibitor, which renders them of great durability, as they consist of a thin metal plate, on which the slate is laid.

74 **VETTER & ERNO, Stuttgart—Manufacturers.**

Gilt and painted cornices and picture frames. Manufactured on a new system, by which they can be made more cheaply than hitherto.

75 **LETTENMAYER, G., Stuttgart—Manufacturer.**

A tableau of gilt cornices. Manufactured on a new and economical system.

76 **ABELE & Co., Stuttgart—Manufacturers.**

Snuff-boxes made of japanned papier maché, with ornamental drawings and inlaid mother-of-pearl, or gold and silver.

77 **HELLER, CHARLES, Stuttgart—Manufacturer.**

Gilt bas-relief of gypsum. Samples of gilt paper, &c.

78 **SEGER, EUGENIUS, Esslingen—Manufacturer and Inventor.**

New process for making bitumen mosaic-work. This



Rau's Ornamental Bird cage and Flower-stand.

is exhibited as claiming several advantages: works made of wood, marble, terra cotta, &c., cheapness, rapid production, resistance to dampness, greater temperature than marble, lively colours, and—greatly—the thickness of the coloured plates is generally under an inch, but this can be increased.

LAAS, F. P., *Schramberg*—Proprietor.
Works of straw plaitings, viz.—hats, bonnets, bands, fringes, tassels, &c.

LEHN, F. G., *Tübingen*—Manufacturer.
Saddles, and billiard brushes; large brush manufacturers.

LEHR & CO., *Gaildorf*—Manufacturers.
Saddles, made of lignum vitae; the same for a horse, and in bone. Match-box of lignum vitae. Seals. Cane-handles. Money-box. Bond napkin rings.

LICH, A., KEMMEL & CO., *Geislingen*—Manufacturers.
Assortment of bone and ivory fancy goods, cane-handles, brooches, baskets, thimbles, paper-

LIDT, FREDERIC, *Geislingen*—Producer, Inventor, and Manufacturer.
Goods in bone and ivory, cane-handles, brooches, &c.

LEHR, C. F., *Esslingen*—Manufacturer.
Buttons and buttons for carvers in ivory, deer-horn, wood, with ornaments.

LEHR, CHARLES, *Ulm*—Manufacturer.
Saddles, carved; bone fan, various shapes. Carved boxes, inlaid with tortoiseshell.

LEHR, G., & CO., *Esslingen*—Manufacturer.
Wooden boxes. Collection of carved ivory, stag handles.

LEHR BROTHERS, *Biberach*—Manufacturers.
Saddles of devices; pastils, and confectionery goods, flowers, and birds with real feathers, &c.

LEHR BROTHERS, *Biberach*—Manufacturers.
Saddles of devices in confectionery, &c., made of tragacanth.

LEHR, WILLIAM, jun., *Stuttgart*—Manufacturer.
Saddles of comfits, sugar-plums, bonbons à liqueur, sugar devices, dragés, lozenges, chocolate.

LEHR, F. H., *Gmünd*—Manufacturer.
Saddles of ornaments, candles and tapers, baskets, flowers, &c., fruits, tea-cups, &c.

LEHR, GUSTAV, *Ulm*—Manufacturer.
Saddles and confectionery, with a lion hunt, made of gum.

LIDT, CHAS., *Stuttgart*—Manufacturer.
Saddles of sticks and canes, with hooks and heads of wood, stag-horn, &c., finely engraved. Sticks and umbrellas and parasols. Frames for umbrellas travelling pocket-cane.

LUMACHER, *Bietigheim, near Stuttgart*—Manufacturer.
Saddles of artificial whet-stones, pumice-stones, and powder, for the use of mechanics in wood, steel, &c., japanners.

94 BLUMHARDT, HENRY, *Stuttgart*—Manufacturer.
Collection of toys made of japanned tin, lead, pewter, bronze, iron and wood.

95 ROMINGER, JOHN, *Stuttgart*—Manufacturer.
Collection of tin and glass toys.

96 DIETERICH, C. F., *Ludwigsburg*—Manufacturer.
Kitchen, stable, and garden implements for children.

97 KNOSP & BACKER, *Stuttgart*—Inventors and Manufacturers.
"Furnished apartments for dolls," (dolls' houses,) in two parts, made of pasteboard.

98 ROCK & GRANER, *Biberach*—Manufacturers.
A large collection of toys and trifling articles of tin and iron plate, brass, papier maché; carriages of different sizes and constructions; countries, mountains, chapels, hermitages, mills with water-house and reservoir; ships, &c.

[The toy-trade of Wurtemberg is known throughout Europe and America. Immense quantities of toys are exported to various countries. The manufacture is largely carried on in the Black Forest.—R. E.]

99 REUSS BROTHERS, *Stuttgart*—Manufacturers.
Samples of stearine candles in various sizes. Stearine soap, and cocoa-nut oil.

100 SUTORIUS, C. F., *Gmünd*—Manufacturer.
Samples of lucifer matches without the combustible mass.

[Before the discovery of the combustible compound now applied to lucifer matches, an ingenious philosophical instrument had shown the possibility of obtaining instantaneous light by discharging a jet of hydrogen gas upon a mass of spongy platinum; and ornamental jars for this purpose, in which hydrogen was produced by the reaction of zinc and dilute sulphuric acid, were in common use. It is still to be ascertained what is the precise nature of this curious phenomenon; experiment has revealed no change either in the weight or composition of the platinum capable of accounting for the ignition of the gas. The compound now universally used for matches consists principally of a paste of phosphorus, in combination with other chemical substances.—R. E.]

101 LINDAUER, Miss E. L., *Stuttgart*—Manufacturer.
A large collection of artificial flowers.

102 KUHN, JEFFREY, *Ulm*—Manufacturer.
Samples of lucifer-matches, &c.

103 VIEHHAUSER GUSTAV, *Ludwigsburg*—Manufacturer.
Samples of artificial leaves.

104 WAGNER, FERD., *Stuttgart*—Builder.
Samples of whet-stones.

105 VON HOFER, LEWIS, *Stuttgart*—Sculptor.
Models of two large groups, representing the breaking-in of horses. The originals were Arabian horses, bred in one of the private studs of His Majesty the King of Wurtemberg, 10 feet high. These groups are executed in Carrara marble, in the royal park of Stuttgart, measuring 15 feet high.

106 HOLDER, T. M., *Stuttgart*—Inventor and Painter.

Pictures in miniature, painted on ivory in a new method. This system consists in painting the flesh especially in positive unmixed colours.

107 PLOUCQUET, H., *Stuttgart*—Producer.

Groups of stuffed animals and birds. A stag-hunt. Boar-baiting; the same in miniature.

Groups and nests of different kinds of birds of prey. Several hawks pouncing upon owls, &c. Groups of various kinds of domestic birds with their young, &c. The groups of the artist are remarkable as specimens of taxidermy, and are represented in the accompanying Plate.

[Among these groups of animals are several in imitation of the attitudes, habits, and occupations of rational creatures. The precise expression of intelligence given to these animals has formed one of the many attractions of the Exhibition. Among the more important of the groups there arrayed is one from the tale of Reynard the Fox, a subject made use of by Goethe for one of his poems, and illustrated by the painter Kaulbach. The groups of animals of this series are modelled, for they can scarcely be reckoned among specimens of the art of taxidermy, after the designs of that great painter, and a series of six tableaux is thus presented.

The story of Reynard the Fox, illustrated by these animals, may be thus briefly told:—"The Lion, the king of beasts, made a proclamation summoning all animals to his royal court, and all but Reynard the Fox duly obeyed the call. In his absence grievous accusations were laid against him, and particularly by one Chanticleer, whose children he had barbarously murdered after gaining admission into the farm-yard under pretence of being a hermit. The King, determining to punish Reynard, sent first the Bear, and then the Cat after him, who

bore a royal mandate to the gate of Reynard's castle, where he is shown waiting for him. The Cat, like the previous messenger, is artfully led into a trap and Reynard escapes. At length, on the Badger coming to fetch him, Reynard consents to appear in court, where he is condemned to execution. While on the scaffold, by a subtle speech, he persuades the King (the Lion) from his purpose by telling him of a great concealed treasure. In testimony of his veracity he brings forward the hare as a witness, which forms another of the groups. Reynard then, considering himself under excommunication, resolves on a pilgrimage to the Holy Land, and is shown in his pilgrim state with a rosary and a palmer's staff. A hare, passing before Reynard's castle, sees him in a pilgrim's garb, and Reynard, flying upon the unsuspecting traveller, uses his palmer's staff with intent to murder him. This is the subject of another group. The hare, fleeing to the king, informs him of the attempt, and the King resolves to destroy Reynard and his castle of Malepardus forthwith. The conclusion of this tale is a combat between Reynard and one of his accusers, in which the former by his art comes off victor, and returns loaded with courtly favours to his castle, where he is represented seated at ease."]

108 WAGNER, T., *Stuttgart*—Inventor, Designer, and Producer.

Statue, "Penitent Magdalen," in Carrara marble.

109 WETZEL, C. J., *Stuttgart*—Inventor, Designer, and Producer.

Glass paintings—"Prophecy of the Destruction of Jerusalem," after Begas. "Esther asking Ahasuerus for grace for her people." "Virgin Mother," after Murillo.

110 BOELSTLER, T., *Eisbach*.

Machine for cutting bread, adapted for large establishments.





220. GROUPS OF STUFFED ANIMALS. BOAR BAITING AND STAG HUNT. M. H. PLOUQUET. STUTTGART, WURTEMBERG.





Commissioner, M. PHILIPP ELLISSEN.

THE collection brought over from this State includes articles in most of the Classes of the Exhibition. The number of exhibitors is thirty-three. The specimens of chemical preparations, illustrative of the raw materials and produce, are creosote, distilled oil, and a new alkaloid which may probably become of ultimate value to the medical practitioner. Among mechanical objects are models of apparatus for the use of the blind, a large key of complicated workmanship, &c. Various philosophical instruments are also shown, which include a daguerreotype apparatus, with a double achromatic lens of five inches diameter, polarization of light apparatus, &c. The specimens of ornamental glass are extremely beautiful, and include objects of considerable size. Several exhibitors have sent objects of a miscellaneous character; and among those of the fine arts are specimens of ivory-carving, models of statues, photography, &c.—R. E.

1 **BROENNER, FRANCIS J., Frankfort-on-the-Maine—Manufacturer.**

Creosote, pure, and refracting light powerfully. Pamphlet, containing specimens of printing inks.

2 **BUSCH, PETER A., Frankfort-on-the-Maine—Producer and Proprietor.**

Rectified "cognac oil," manufactured out of common gin, or thinned spirits.

3 **ZIMMER, DR. CONRAD—Manufacturer. (Agent, F. W. Roller & Co., 15 Union Court, Old Broad Street, London.)**

Pure crystallized chinidine.

[The sulphate of this alkaloid is generally united with the sulphate of quinine, manufactured from the ordinary kinds of yellow bark; but it is only lately that it has been produced separately as a salt, and its properties ascertained.

Experiments made up to the present time with the sulphate of chinidine are considered to show that it is as powerful in its effects as the sulphate of quinine. This, added to the fact of its being obtainable from the cheaper kinds of the yellow bark, which are not limited to the district of Bolivia, justify the opinion that the sulphate of chinidine may take an important place amongst medicinal substances.—R. E.]

4 **MINOPRIO & Co., Frankfort-on-the-Maine—Manufacturer.**

Samples of snuff, viz. :—
Paris rappee. Dutch rappee.
Marino Marocco, coarse and fine.

5 **BARTHEL, JOHN CHARLES, Frankfort-on-the-Maine—Inventor.**

Models of apparatus for the use of the blind: viz.—

Apparatus to facilitate the twisting of straw or rope.

Apparatus to moisten straw to be used for twisting straw carpets and straw mats. They both require but a small space, and untwisting is prevented, which will be of great advantage, particularly for the blind.

Improved apparatus for making straw and list carpets. Lace apparatus and a chair for the blind. The former is used in making round lace, clock ropes, &c., and the latter contains various working springs.

Apparatus for making square, round, and half-round tow mats, constructed for the blind; the drawing of tow mats is engraved in a peculiar manner between the holes of the board.

Apparatus for tarring tow mats; the same board can be used for various kinds by making a different use of the holes.

Articles manufactured by the blind, under the direction of the exhibitor: straw carpet, tow mat, list carpet, lace cords.

6 **WEBER & SCHULTHEIS, Frankfort-on-the-Maine—Producers.**

Single and double-barrelled rifles.

7 **ALBERT, J. W., Frankfort-on-the-Maine—Manufacturer. (Agents, Tootal and Browne, Piccadilly, and 11 Bond Place, London.)**

Daguerreotype apparatus, with double achromatic lenses of 5½ inches in diameter; with specimens produced by

8 **MEYER & SCHWARZE, Frankfort-on-the-Maine—Manufacturers.**

Specimen of coloured cotton and woollen yarn.

- 9 ROTH, C. W.—Manufacturer.
Enamelled, waxed, and brown calf skins.
- 10 ROTH, J. A., & SONS, *Frankfort-on-the-Maine*—Manufacturers.
Calf-skins, black on one side, brown, and varnished.
- 11 RUPP & BECHSTEIN, *Frankfort-on-the-Maine*—Producers.
Six black varnished calf-skins, soft and pliable.
- 12 BALDENECKER, J. B., jun., *Frankfort-on-the-Maine*—Manufacturer.
Various samples of ink for copper-plate and other printing.
- 13 KREBS, BENJAMIN, and BAUER, J. C.—Producers and Proprietors.
Specimens of letter-press printing. The German-text types, are cut after the concordance system (proportional size of letters), extensively introduced into Germany. By this process the kerning of the overhanging parts is obviated, and the type when cast occupies only the body of the letters. Roman and italic of a novel and superior style.
- 14 WUEST, CASPAR LUDWIG, *Frankfort-on-the-Maine*—Inventor.
Playing cards of various kinds.
- 15 VACONIUS, JOHANN JOSEPH, *Frankfort-on-the-Maine*—Manufacturer.
Sofa carpets, with border.
- 16 HOFFMAN, G. J., & SON, *Frankfort-on-the-Maine*.
Porcelain stove intended to combine the comforts of an open fire with the usual advantages of a stove. This stove is represented in the illustration on the next page.
- 17 JUNGE & WALTHER, *Frankfort-on-the-Maine*.
Gilt lustre in bronze for 32 lights, in the Grecian style
- 18 RAAB, G. A. B., *Frankfort-on-the-Maine*—Producer. (Agent Mr. J. Kellermann, 13 Broad Street Buildings.)
Great key, exhibited for fine and difficult workmanship. Iron safe.
- 19 ZIMMERMANN, ERNEST GEORGE, *Frankfort-on-the-Maine*—Manufacturer. (Agent in London, F. Kellermann, 94 London Wall.)
Sundry articles in zinc and iron. Ash cases. Match-stand. Card racks. Screen. Screen, with candlestick. Ink-stands. Jewel-case. Thermometers, encased in iron. Looking-glasses. Flower-stand. Card-trays. Pen and cigar holders. Watch and tobacco cases. Candlesticks, branched and flat. Match cases. Paper weight. Bronze cup. Night-lamp. Night-lamp, with watch. Iron wire work. Transparent plate. Watch, with white and red dials. Flower-pots. Iron and zinc castings of various groups of animals and birds, &c.
- 20 GOLDSCHMIDT, MORITZ, & SON, *Frankfort-on-the-Maine*—Manufacturers.
A lady's jewel-box, containing bracelet, brooch, watch-hook, a pair of earrings, and chains of gold. Green enamel with diamonds.
- 21 TACCHIS, P. A., & Co., *Frankfort-on-the-Maine*. (Agents, J. & R. M'Craken, Old Jewry.)
A large fountain of alabaster crystal, with tubes, shells, and a carcel lamp, with gilt bronze ornaments, and arrangements for the more effective conducting the water, for dining rooms and conservatories. The fountain is represented in the engraving on the next page.
Vases, on pedestals of alabaster glass, with gold decoration, Grecian style.

Vases of green (*chrysoptase*) glass, gold decoration, Grecian style.

- 22 VOGELSANG, J., & SONS, *Frankfort-on-the-Maine*—Inventors and Manufacturers.

Glass wares, coloured, cut, and gilt, viz.:—Flower and candelabra ornaments; pink glass plated with layers of alabaster, cut and gilt.

Vases on pedestal, in alabaster glass, with chrysoptase frosted handles in form of dragons, forming one piece with the body of the vase; alabaster, with sapphire blue twisted snake handles, enamelled; flint-glass, plated with enamel, cut and painted; turquoise, plated with enamel, cut flowers and arabesques, gilt; double plated with enamel and sapphire blue, black etched pattern, and gilt; alabaster, with chrysoptase frosted figures and body; crystal, with sapphire blue plated and cut palm border, pink and sapphire blue snakes, and pink body; and alabaster, with turquoise border and snake, enamelled.

Lock bottle, wine glass, and champagne glass, in crystal, cut with ruby Gothic pattern and spiral engravings. Wine glass, crystal, cut with ruby Gothic pattern and spiral gold leaves.

Vases, crystal plated with enamel and sapphire blue, cut and enamelled in colours.

Tazzas, pink plated with enamel, with pink snake, cut and gilt. Vases, crystal, cut, with ruby middle and ruby stones, gilt. Magnum candle lamps, chrysoptase plated with enamel, cut and gilt. Scent bottles, crystal, cut, ruby stones, and gilt; and crystal plated with enamel, with pink snake, gilt.

Large chalice, with ruby cover, engraved.

- 23 ALBERT, J. V., jun., *Frankfort-on-the-Maine*—Manufacturer. (Agent, A. Pritchard, 163 Fleet Street.)

Moor's head conjuring toy, and German dolls. Specimens of artificial glass eyes, for birds, animals, &c. Reliefs cut in stag's horn, in the manner of cameo.

Optical objects for the polarization of light:—Large plate of tourmaline. Large prism of nickel. Achromatic prism of rock crystal. Discs of rock crystal and dark quartz. Discs of topaz, diopsid, and tourmaline.

[If a beam of light be allowed to fall upon a plate of glass at the angle of 56°, it separates into two rays or beams, with different properties on different sides. If we suppose another plate of glass to be placed over the former, the reflected rays will pass through it when in some positions, and not in others; if the glass be turned through an angle of 90°, the light will be reflected in one quadrant, transmitted in a second, and so alternately till the circle be completed; that is, in two quadrants it is reflected, and in the other two it is refracted, and hence it is said to be polarized; but, as we know nothing of the poles, this must be considered as a conventional term, to avoid repeating the conditions by which it is produced. The objects exhibited are well known to philosophers from their polarising effect upon the rays of light transmitted through them.—J. G.]

Fourteen models in crystal of precious stones. German hard glass chemical apparatus. Thermometers; register and others. Phenakistoscope, after Professor John Müller, for explaining the theory of vibrations—latest improvements, with portfolio of drawings. Stereoscope, with new and interesting drawings after Professor F. M. Hessemer. Portfolio of drawings.

- 24 DRESLER, FREDERIC, *Frankfort-on-the-Maine*—Inventor and Manufacturer. (Agents in London, G. Duplex, Idol Lane; and J. Kellermann, 13 Broad Street Buildings.)

Specimens of types of the German, Gothic, English, French, Russian, and Hebrew languages; ornaments, borders, &c. Matrices of the types.



Hoffman's Porcelain Stove.



Tachis' Alabastrer Crystal Fountain.

Types and ornaments of a new metallic composition, used by bookbinders.

25 EHR, N., *Frankfort-on-the-Maine*—Manufacturer.
Three furniture-brushes. Hair brushes.

26 GOUDA, PAUL FRANZ, *Frankfort-on-the-Maine*, and
11 *Queen Street, London*—Manufacturer.

Work-boxes, with bronze plates. Double tea-caddy.
Work-box, with painted plate. Knitting box, with tray;
with bronze plate; and with steel plate. Work-box, with
the same. Knitting-boxes. Ink-stands. Ladies' desks,
envelope, work, and knitting-boxes, with trays.

27 KOEHLER, JOHANN, *Frankfort-on-the-Maine*—
Producer.

Tea-caddy, made of wood in imitation of German
needlework, in mosaics.

28 WOHLFAHRTH, J. E. sen., *Frankfort-on-the-Maine*—
Manufacturer.

Show card. Writing desk. Diary. Ruled paper.

29 DELKESKAMP, FREDERIK WILLIAM, *Frankfort-on-*
the-Maine.

Picturesque relief, a scene in Switzerland.
Picturesque relief of the Swiss Alps and their bound-
aries. Incomplete specimens,

30 SCHMERRER, S., *Frankfort-on-the-Maine*—
Bookseller.

Works and objects of the middle ages and renaissance,
by C. Becker and S. von Hefner.

Gothic A B C, or rules of the Gothic styles for artists
and artisans, by Fred. Hoffstadt.

Memorials of Roman architecture on the Rhine, by
Geier and Gortz, Nos. 1 to 4.

31 VANNI, ANTONIO, *Frankfort-on-the-Maine*—
Producer.

Group, in ivory, Ariadne on a pedestal.

32 KRESS, GEORGE LEWIS VON, *Offenbach, near*
Frankfort-on-the-Maine—Producer.

Small statue of the poet G. E. Lessing, produced by
electrotype process.

The model is by Professor E. Rietschel, sculptor, Dres-
den. Bas-relief, "Cupid upon a panther," electrotype.

Model by E. Rietschel. Crab, lizard, snake, &c.,
modelled from nature.

33 STRAUCH, FREDERIK—Producer.

Specimens of plain and coloured photography.





Commissioner, M. HECTOR ROESSLER, 23 Southampton Street, Strand.

THE productions of this State exhibited are the united contribution of about eighty exhibitors. Proportionately to the number exhibiting, the objects included under raw materials are more numerous than in several other instances of the collections of Foreign States. Some of these are of high interest, particularly those sent from Salshausen and Kreuznach. The agricultural products forwarded by the Central Board of Agriculture with the implements have a peculiar value and interest, as the practical representatives of the fruit of the soil and of the instrumental means employed in its production. The chemical products are also valuable—such as those exhibiting the production of sugar, dextrine, &c., from the starch of the potato. Musical instruments and some philosophical apparatus will also be found among those articles. The linen manufacture is represented by a few exhibitors of towelling, table-cloths, &c. A more important manufacture to this State, that of leather, has nine or ten exhibitors. Miscellaneous and fancy wares, often so largely contributing to the export commerce of Foreign States, are adequately represented here. In the fine arts are some elaborate specimens of carving, and specimens of careful plate-printing, exhibited to illustrate the necessity for discretion on the part of the printer in developing the effects intended by the artist and engraver.—R. E.

1 BUECHNER, WILHELM, *Pfungstadt, near Darmstadt*
—Manufacturer.

Specimens of ultramarine:—The peculiarities are their lightness and impalpability, so that, with some exceptions, they can be employed in the glazing of cotton and paper, with the agate-stone, without requiring the use of the brush.

[Ultramarine, the "sapheiros" of Theophrastus, was employed at an early period in painting. Theophrastus also places "cyanus," which was the blue Armenian stone, among the colours used by painters: this latter is coloured by the bicarbonate of copper, and is not so permanent as that produced from the true "lazulite"—the ultramarine. Lazulite is found in Great Bocharia and in China; it is acted upon by the acids, but is unchanged by the test of fire, which destroys the carbonates of copper. Venice monopolized the preparation of ultramarine for a long period.—R. H.E.]

2 ROSENBERG & Co., *Giessen*—Proprietor.

Specimens of manganese ore, exhibiting a very perfect crystalline structure, and yielding, on an average of four analyses, as much as 96.45 per cent. peroxide of manganese. Found near Battenberg, near Giessen.

[Manganese is obtained in Europe exclusively from the peroxide with or without water. This occurs in various places, and is very abundant. Pyrolusite, the crystalline variety, contains very little water, and gives off 10 to 11 per cent. of oxygen at a red heat. It is generally massive, but not unfrequently distinct crystals occur.—D. T. A.]

3 SALT and LIGNITE WORKS, *Salzhausen*.

Raw products:—Earthy lignite, employed in the manufacture of salt; bituminous wood, employed in the manufacture of dressing cases, &c.; and leaf lignite.

Principal articles of manufacture:—Lignite blocks (*Braunkohlenklötze*), prepared from the smaller particles, also used as a combustible, in another stage of the manufacture of salt; common salt; salt for manure (*Dungsalz*), produced from the remains of the boiling and refining of the salt; salt scum (*Salzschaum*), taken from the upper surface of the salt-pans, and mixed with the unconsumed portion of the sediment, also a powerful manure; lignite ash, used in the improvement of damp meadows and heavy ground.

[Dr. Braund, the Professor of Botany at Giessen, has discovered lately, in the lignite of Salzhausen, seeds and leaves of the vine (*Vitis vinifera*).—*Justus Liebig.*]

4 BRIEL, W. & Co., *Giessen*—Proprietor.

Specimens of manganese ore.

5 SALT WORKS, *Theodorshalle, near Kreuznach*.

Salt crystals, remarkable for their size:—Bottle of concentrated mother-ley (*Mutterlauge*).

The salt for culinary purposes is produced from a spring, entirely free from sulphate of lime, which rises from the porphyritic hills on the river Nahe, a stream which enters the Rhine near the town of Bingen.

The mother-ley (a concentrated fluid which remains in the salt-pans after the separation of the salt) contains, with a specific gravity of 1.3176, in 100 parts;—

Chloride of sodium	0.389
Bromide and iodide of sodium	0.689
Chloride of potassium	2.383
Chloride of calcium	25.703
Chloride of magnesium	3.758
Water	67.068

The mother-ley, on account of the considerable quantities of bromine, iodine, and chloride of calcium which it contains, is employed efficaciously for baths.

[The manufacture of salt from brine springs is conducted in nearly the same manner in many parts of the Continent; and as one very large establishment exists near Kreuznach, some account of the process may find place here.

Brine springs are seldom saturated or sufficiently strong to render it economical to evaporate them at once, as even in favourable cases the quantity of salt is less than one-tenth that of the water, and sometimes not more than one per cent. The natural brine is therefore pumped to a canal at the top of a building, whence it is allowed to descend slowly over a vast wall of faggots 30 to 40 feet high, 6 to 10 feet thick, and 1,200 to 1,500 feet long, exposed on the side of the prevailing winds. Descending slowly through these faggots, a large quantity of the water is evaporated, and the remainder is repumped as a much stronger brine to another similar wall; and so on four or five times over, until the quantity of salt is 16 to 20 per cent. The evaporation is then completed by the aid of fuel.—D. T. A.]

6 JONGHAUS & VENATOR, *Bauerkeller's Praganstalt, Darmstadt*—Manufacturers.

Maps in relief and maps printed in colours:—Geological map in relief of the grand duchy and electorate of Hesse, with the duchy of Nassau and neighbouring countries, tinted in 27 colours, upon a scale of 1 in 900,000 horizontally, and 1 in 90,000 vertically; by L. Ewald, secretary of the Geographical Society of Darmstadt. This map extends from Muenster to Anspach, and from Brunswick to Zweibrücken (Deux-ponts), and contains, besides the mountains in the above-named countries, the greater portion of the Hartz, the Thuringerwald, the Haardt mountains, the Hundsruok and the Eifel, the Teutoburgerwald, and the Weser mountains.

Geological map, in relief, of Wurtemberg, Baden, and the neighbouring countries, including the Palatinate and Alsatia, tinted in 30 colours, by L. Ewald; upon the same scale as the preceding map. This map contains the Odenwald, the Black Forest, the Hundsruok, the German portion of the Jura (Rauhe Alp), and the Swabian tableland.

Bauerkeller's Hand-atlas, embracing the principles of universal geography, in 80 maps, a physical description of the surface of the globe, and various statistical tables and topographical indices, by L. Ewald. Of this atlas the half, or forty maps, printed in colours, have already appeared, two in illustration of the mathematical, three of the physical, nine of the topical, and twenty-six of the statistical and topographical departments of the work, with a corresponding portion of letter-press.

[We owe to the Germans the first introduction of, and subsequent improvements in, the art of embossing paper, so as to present in relief, by the process of printing, any required series of lines and marks. Such a process seems well adapted to the purpose of exhibiting roughly some of the more prominent physical features of a country in a striking way to the student. More than this can, however, hardly be expected; but for educational objects this ought not to be neglected. Bauerkeller's maps of Switzerland and of Europe have for some time been known in England.—D. T. A.]

7 KOCH, F., *Oppenheim*—Manufacturer.

Alkaloids, from Peruvian bark; for medicinal purposes, especially in agues.

[The alkaloids to which Peruvian bark owes its medicinal properties are principally cinchonia and quina. The latter, in combination with sulphuric acid, is the ordinary quinine of the shops. These alkaloids are intensely bitter, and the latter especially has proved one of the most valued therapeutic agents in the hands of the physician. Quinine is popularly considered a specific in intermittent diseases, and is unquestionably of great though not infallible service in such disorders.—R. E.]

8 OEHLER, CARL, *Offenbach*—Manufacturer.

Samples of chemically pure creosote, crystallized creosote, coal, naphtha, resin, lamp black, Paris black for copper-plate and lithographic printers, and for dyeing Spanish leather; pure crystallized sal ammoniac.

9 BERNARD BROTHERS, *Offenbach*—Manufacturers.

Samples of snuff.

10 MEYER & LINDT, *Sprendlingen, near Frankfort-on-the-Maine*—Manufacturers.

Samples of the finest wheat flour, meal groats, and rye flour.

11 MUELLER, J. P., *Offenbach*—Manufacturer.

Specimens of tobacco and cigars.

12 ZAHN & VOLBRECHT, *Ruesselsheim, near Mentz*—Manufacturers.

Samples of chicoré, or German coffee.

[The botanical name of chicorée is *Cichorium intybus*. It is imported in large quantities into Great Britain, being used to an enormous extent in the adulteration of coffee. It is cultivated largely in Germany and the Netherlands. The tap-root is the part of the plant which is used. It is cut in pieces, dried, partially torrefied, and then used alone, or mixed with coffee for preparing beverage. It is also cultivated largely in Britain—to the extent of perhaps 3,000 or 4,000 tons annually.—R. E.]

13 The CENTRAL BOARD of AGRICULTURE for the GRAND DUCHY OF HESSE, *Darmstadt*.

Samples of agricultural products:—Gommer, a very favourite and wholesome article, much used in the neighbourhood in the preparation of soups; manufactured from black amel wheat (*Triticum amyaleum*), which, for this purpose, is deprived of its skin by mill-stones.

Oak bark, used in the tanning of sole leather, from the *Quercus pedunculata*, mixed with *Quercus sessiliflora* 15-year shoots, from the extensive oak forests near Hirschhorn, on the Neckar.

Tobacco leaves (*Deckblätter*), from Lorsch and Virnheim near Mannheim, grown upon a light sandy soil.

[The seeds of *Pinus pinea* (the stone pine) are commonly sold in foreign markets as an article of dessert. They taste somewhat like hazel nuts.—J. L.]

Models of agricultural implements, &c.:—The improved plough by Bergstrasser. The form of the coulter and of the stils of the well-known Flanders plough is retained, both, however, united in one; and upon that part of the coulter which is most subject to wear, a plate, acting as a carpenter's plane, is affixed by a screw, so that the plough rests solely upon this plate and upon the heel, and therefore requires less power than other ploughs with narrow soles.

The Braunfels potato mill, for brandy distilleries; crushing the potato with scarcely any manual assistance, and reducing it to the finest pulp. Comparative trials with cylinders of wood and stone have shown the superiority

of this machine, in the quantity of brandy produced. Upwards of two tons of potatoes may be reduced to a complete pulp, by this machine, in one hour.

Sluices of wood and stone, for irrigation.

14 HOFMANN, GEORGE WILHELM, *Ingenheim, near Darmstadt*—Manufacturer.

Specimens of starch from potatoes, used as weavers' glue for cotton warps, and for dressing printed calicoes.

Dextrine, two sorts: Gomelin in crystals, and in powder. Glucose, used instead of gum-arabic for dressing, weaving, and in printing wools, cottons, or silks. Also advantageously employed by paper-stainers, and for stiffening gauzes, glazing of paper, &c.

Syrup of starch (*Traubenzucker*), employed in the manufacture of beer and vinegar. The usual proportion is half of this sugar and half malt.

White and brown sago.

Starch from wheat (*Waitzenstärke*), of four varieties.

[Dextrine is the chemical name of starch after it has been exposed to a temperature of 400° Fahrenheit. Starch may be very readily converted into sugar (*grape-sugar*) by boiling it for several hours in diluted sulphuric acid and water. The acid may afterwards be separated from it by neutralizing with chalk, and the solution in evaporation yields a quantity of grape-sugar rather exceeding in weight the quantity of starch employed. It is extensively used in some parts of the Continent, where sugar from the sugar-cane is not readily obtained.—R. E.]

15 APPEL, CARL, *Griesheim, near Darmstadt*.

Various sorts of forest, grass, and clover seeds.

16 MICHEL & MORELL, *Mayence*—Manufacturers.

Black for copper-plate printing of different sorts, prepared from the best wine-lees finely ground, easily worked and producing a durable hue.

Lamp-black, best calcined, in lumps, used for lithography, of the deepest hue, easily worked and destitute of resin; from pine calcined, drying quickly, used for varnishing fine soft calf; and another sort useful for the preparation of printing black.

Varnish-black and real ivory black, finely ground; darkest black varnishing colour, to be used with oil.

Paste black, dissolved in liquid; vivid black, for paper-hangings, &c.

Paris black, a varnish black, that can be applied with oil.

Black for blacking, Frankfort black, &c.

[The whole of the compounds described contain essentially the same colouring matter—carbon, in different molecular conditions. There is, however, a marked difference in their appearance to the eye; and the practised artizan detects various degrees of excellence unappreciable to others. The Frankfort black, which is prepared from the charred husks and residue of the wine process, is distinguished by the peculiar velvety lustre of impressions taken with it. The notes of the Bank of England are printed with this black, which affords one test of their genuineness.—R. E.]

17 DICK & KIRSCHTEN, *Offenbach*—Manufacturers.

Phaeton, built chiefly of iron, for one or two horses, and patterns of three different axletrees.

18 DICKORE, A., *Giessen*—Gun-maker.

Rifle, four feet ten inches long, inlaid with gold and silver. The stock of walnut-wood is carved and ornamented with carvings in ivory of several hunting subjects, together with mould, measure for powder, and screw ramrod. The sight is connected with a micrometer, by which the aim, at the usual rifle target at 120 paces, is rendered more certain.

19 SCHUCHARD, H., *Darmstadt*—Manufacturer.

Several patterns of hats, cocked and round from felt, or hare skin; silk hats with felt foundation; hat (and feather) of beaver and musk; glazed hats in their original colour, &c.

Two officers' helmets, one being made out of a single flat piece of leather without seam; and the other, helmet and peak both of one piece of leather, the seam being under the brass behind.

20 KUEHNST, GOTTLIEB, *Darmstadt*—Manufacturer.

Mahogany grand piano-forte of 6½ octaves, with peculiar action.

21 MAURY, J. C., *Offenbach*—Manufacturer.

Various helmets, military and other caps in japanned felt and leather. Fire-buckets from one piece.

22 HUCH, H. C., *Mentz*—Manufacturer.

Levelling instrument, with case and stand, furnished with an achromatic telescope, with an object-glass of above 1 inch diameter, and horizontal micrometer movement. It is intended for the use of architects, engineers, agriculturists, &c., and for laying down railroads and highways.

23 KLEIN, C., *Mentz*—Manufacturer.

Alt vono, a small brass instrument, and an E flat clarinet, both with German silver keys; F clarinet; B clarinet; B cornetto, entirely of German silver.

[Clarionets are named according as they are pitched; and the three most generally used are the C, B flat, and A, each as they stand being a note higher than the last, i. e., a note which the C clarinet would sound as C, a B flat clarinet would sound D, and the A clarinet E flat. There are small shrill clarionets in military use called E flat and F. The various clarionets are used for different keys, one executing with facility what in another is found difficult.—H. E. D.]

24 MUELLER, C. A., *Mentz*—Manufacturer.

Brass cornet à piston.

25 SCHOTTS, B., & SONS, *Mentz*—Manufacturers.

Semigrand pianoforte in zebra wood, 6½ octaves.

26 SEIDEL, JOSEPH, *Mentz*—Manufacturer.

Clarionets of boxwood, mounted with ivory, brass keys; flutes and piccolo of the same materials.

27 ARZT, P. L., *Michelstadt*—Manufacturer.

Specimens of green and mulberry woollen cloth, buckskin, &c.

28 MÆRSCHER, WINZENRIED, & Co., *Herrenhaag, near Bidingen*—Manufacturers.

An assortment of crochet woollen work (*Häkel-oder Strumpfaaren*), including worsted gloves, &c.

29 LOHN, Steward of the Hospital of Schlitz, *near Fulda*—Manufacturer.

Towels of different damask patterns, and damask tablecloths, with napkins, the whole from hand-spun flax, and grass bleached, from the manufactory of the exhibitor.

30 STRUTH, V., sen., *Lauterbach*—Manufacturer.

Table-cloth and napkins, from flax yarn, spun by hand and grass bleached.

31 IHM, BOEHM & PFALTZ, *Offenbach*—Manufacturers.

Specimens of japanned leathers.

32 HEYL, C., *Worms*—Manufacturers.

Black japanned leather for shoes and boots. The leather has a deep gloss, and remains pliant to the last.

- 33 DOERR & REINHARDT, *Worms*—Manufacturers.
Japanned and enamelled calf-skins, the former exclusively employed by shoemakers, and the latter in the manufacture of furniture.
- 34 HELLMANN, J., *Neckarsteinach*—Inventor and Manufacturer.
Patterns of leather for soles. This leather is said to be prepared by a process different from any in use in England, France, and North America. The patterns exhibited were prepared from a German hide.
- 35 MAYER, PAUL, *Mentz*—Manufacturer.
Patterns of manufactured leather. Half-brown hide, half-bridle hide, brown calf-skin, waxed calf-skin, and several boot-legs and fore-shoes, manufactured from calf and horse hides.
- 36 MAYER, MICHEL & DENINGER, *Mentz*—Manufacturers.
Japanned and enamelled hides, black and in various colours, for saddle and coach work. Dyed calf-skins, moroccos (goat-skins), roans (sheep-skins unsplit), and split sheep-skins, dyed in different colours for bookbinding furniture, boot and shoe-making, hatters, coach-builders, &c.
Black japanned calf-skins (patent calf), enamelled goat and calf skins, black and coloured, for boot and shoe work.
Japanned calf (stout), for coach and harness-makers, hog-skins, harness hides, hides for bridles, stirrups, and saddles, and other hides and skins for various uses.
- 37 MINOPRIO & HOHWIESNER, *Bingen*—Manufacturers. (Agent, F. Kellermann, 94 London Wall, City).
Black japanned calf-skins; calf-skins with the hair, for coach-makers, for trunk-makers, and heifer-skin (*Raupenfell*), for saddlers.
Sheet nettle-cloth (*Nesselstoff*), japanned in three colours, black, green, and yellow.
Pair of boots of japanned calf-leather. Pair of shoes with the hair on the inside. The employment of japanned leather, with the hair upon the inside of the skin, for boots and shoes, is intended to preserve the feet against wet and cold.
[The new material called "nettle-cloth" consists of a very thick tissue cotton, so prepared as to become durable and compact, and it is stated that it may be substituted for leather, particularly for the peaks of caps and waistbands, and at a smaller cost. It can be manufactured of various degrees of strength.]
- 38 FREUND, E. A., *Offenbach*—Manufacturer.
Specimens of ornamental labels, embossed and enamelled cards and paper.
- 39 FROMMANN, M., *Darmstadt*—Manufacturer.
Specimens of playing cards of various sorts.
- 40 REUTER, W., *Darmstadt*—Manufacturer.
An assortment of various descriptions and qualities of playing cards.
- 41 PETRI, JOH., *Mentz*—Manufacturer.
Specimens of black for copperplate printers.
- 42 SCHNAPPER, H. L., *Offenbach*—Manufacturer.
Various specimens of playing cards.
- 43 WEBER, J. B., *Offenbach*—Manufacturer.
Specimens of coloured and marbled papers.
- 44 WUEST BROTHERS, *Darmstadt*—Manufacturers.
Patterns of coloured and marbled papers.
- 45 KERN, HEINR., *Mentz*—Manufacturer.
Various articles, ornamented with embroidery upon canvas.
- 46 IHM, FERD., *Offenbach*—Manufacturer. (Agents, J. A. Hoffmann & Co., 18 Laurence Lane.)
Several specimens of printed and painted oil-cloths for table covers, pianos, and the interior of railway carriages. Entire pieces of waxed oil-cloths.
- 47 SCHUMACHER, JOS., & SON, *Mentz*—Shoemakers.
Assortment of shoes, boots, slippers, &c.
- 48 WERNER, M., *Mentz*—Shoemaker.
Assortment of gentlemen's boots.
- 49 REIS, G., & CO., *Mentz*—Manufacturers.
Camphine lamps, and improved camphine.
[Camphine, as it is commercially denominated, is a redistilled spirit of turpentine, freed by that process from resinous matter, and thus fitted for combustion. It is used in lamps of a peculiar description, in the arrangement of which a rapid current of air and an extreme thinning out of the flame are absolute requisites to its perfect action. If these are not attended to, the odour of the lamp becomes extremely offensive, from a part of the vapour escaping combustion.—R. E.]
- 50 SEEBASS, A. R., *Offenbach*—Manufacturers.
Assortment of fine cast-iron articles, black varnished and bronzed, viz.—inkstands; night clocks and night lamps, with figures in relief; candelabra, with figures; table and hand candle-sticks; candle-shades; fruit-dishes, &c.; cigar and watch stands, with figures, and other descriptions of useful ornaments.
- 51 SCHREGER, B., *Darmstadt*—Manufacturer.
Articles of jewellery, manufactured in oxidized silver, with solid gold ornaments. Paper weights; bracelets; brooches; Albert chains; ring and bridge chains; breast pins; ornament for a walking stick, with horses; match case.
- 52 WAGNER, JOH., *Mentz*—Manufacturer.
Patterns of mock-pearl and other beads (*Glas- und Wachsperlen*), in all colours, and several ornamental objects in beads.
- 53 BUETTNER, P., *Darmstadt*—Manufacturer.
Oval looking-glass in gilt frame, the ornaments in composition; toilet-glass; the same, in velvet and gilt frame.
- 54 REINHARDT, J. M., *Mentz*—Manufacturer.
Various patterns of straw chairs with walnut-tree wood frames.
- 55 WENDERLEIN, J. H., *Darmstadt*—Manufacturer.
Several gilt picture frames, and an assortment of frame patterns in the Gothic and renaissance styles.
- 56 ANDRE BROTHERS, *Hirschhorn, near Heidelberg*—Manufacturer.
Patterns of walnut-tree veneers, from wood of the Odenwald.
- 57 GICK, J. G., *Mentz*—Manufacturer.
An assortment of basket-work, in rushes, straw, cane, feathers, &c.
- 58 SCHMIDT, ERNST, *Darmstadt*—Manufacturer.
Spun coat and waistcoat buttons, made by hand.
- 59 ANSELM, F. C., *Offenbach*—Manufacturer.
Specimens of purses, gold and silver lace, bullion, &c.



BROTHERS, Offenbach—Manufacturers.
of cigar cases, leather purses, pocket books,
portmonnaies, spectacle cases, &c.

K, J. G., Offenbach, Manufacturer.
rattan walking cases (*Spanish rohr*), and
papier maché.

Co., Offenbach—Manufacturers. (Agent,
Kellermann, 94 London Wall.)
pocket books, and other cases.

PHILIPP, Offenbach—Manufacturer.
and other specimens of weaving, called

, J. G., sen., Offenbach—Manufacturer.
leather, consisting of purses, cigar-cases, with
el bindings; pocket-books; paper and blot-
ting-cases for ladies and gentlemen, &c.

NGHAUS, A., Offenbach—Manufacturer.
of pocket-books, cigar-cases, purses, &c.

H, J., & Co., Offenbach—Manufacturers.
terns of tea caddies; cigar, card, counter,
&c. in yellow and white varnished wood, with
; ladies' companions; cigar-cases; purses;
portfolios, &c., in leather with steel

X, HEINRICH, Bingen—Manufacturer.
olio in red morocco leather, with lock and
ad for the ornamental gilding, which has
by hand and not by a press.

, F. A., Offenbach—Manufacturer.
ent of purses and "tricot" goods.

L., & BECKER, Offenbach—Manufacturers.
ks of various descriptions; dressing-cases;
writing portfolios; various leather purses
, with steel frames, albums, &c.

AUT, C., jun., Offenbach—Manufacturer.
of cotton, half-silk, and silk purses, made
l and partly by machinery, ornamented with
nted in steel.

INSTILL, J., Darmstadt—Maker.
of wax flowers and fruit. Bunch of grapes
branches of apple trees in bloom; camellia
flowers and buds.

TUB, CHRISTIANE, Bingen—Worker.
, imitating engravings, executed with fine
n white silk, with portraits of Queen Vic-
nce Albert. A landscape in embroidery,
se Castle of Stolzenfels.

LSING, H., Darmstadt—Printer.
from two landscapes, etched by Abbema of
th the view of showing how far the art of
assist an engraving. One proof shows the
ted in the ordinary manner; the other, what
plished by the taste of the printer. Both are
ch plate, printed one after the other, with
r and upon the same paper.

be generally known that in the production
rich wood-cut blocks are used, or in that of
ravings, much of the effect of the impression
taste, or rather to the discretion of the

printer. The preparation of a fine wood-cut block or steel
plate for printing, so as to produce the real effect of which
it is capable, is often extremely tedious and difficult, and
requires much practical skill.—R. E.]

74 **FRIEDRICH, J. H., Darmstadt**—Carver.

Carvings in ivory and staghorn. Ivory goblet; sugar
dish of cocoa-nut; paper-knives; cigar mouth-pieces;
brooches; napkin rings; hand candlesticks; inkstands;
watchstands; crucifixes; walking-stick heads; riding-
whips; powder-horns, tablets, &c.

75 **HEYL, C. W., Darmstadt**—Carver.

Carvings in ivory. The principal article a colossal
goblet, composed of three principal portions, stand, body,
and cover. The principal part, or body, represents in alto
relief the battle fought by Herman (after a drawing by
Lindenschmitt, in the possession of H.R.H. the Grand
Duke of Baden). The body is supported by the figures of
eight German emperors (taken from the portraits of the
emperors in the Roemer at Frankfort). The cover, in the
shape of a cupola, is surmounted by the figure of Germania,
resting her right hand upon a shield, and her left upon a
sword. The whole of the minor ornaments are in the old
German style.

This goblet is represented in the accompanying Plate.

The other specimens consist of ivory carvings, for needle
and ball books; paper-weights; snuff-boxes; bracelets;
paper-knives; brooches; heads for walking-sticks; riding-
whips.

77 **SCHRODER, J., Darmstadt**—Manufacturer.

Models for the elucidation of descriptive geometry,
and for the construction of the curves for the teeth of
wheels. Model of joinings in wood and of roof joinings.
Patterns of roof and other mouldings. Models of crystals,
according to Dr. Kopp. Model of a window frame; spiral
staircase; several drawing instruments; rules, squares,
and curves.

78 **ZABERN, THEODOR, Mentz**—Printer.

Several specimens of typography, executed by the
printing press, the application of which to such com-
plicated work is claimed as new.

79 **DONMICH, P., Mentz**—Manufacturer.

Patterns of several articles manufactured of fur and
seal skins used for clothing.

80 **BARON KLEIN, Mentz**—Inventor.

Choregraphical apparatus for measuring heights.

81 **STEIN & SCHROEDER, Mentz**—Producers.

Several specimens of hops.

82 **DAEL, G., Mayence**—Manufacturer.

Samples of Rhenish wine of various qualities.

83 **METTERNICH, C. A. DE, Mayence**—Manufacturer.

Samples of pine-apple attack, or essence of punch,
Cognac brandy, and May wine syrup.

84 **SICHEL, M., Mayence**—Manufacturer.

Samples of cherry brandy and Cognac brandy.

85 **BINGMAN, F., & Co., Offenbach**—Manufacturers.

Various specimens of canvas.

86 **KLEIN, jun., RIESER, & Co., Offenbach**—
Manufacturers.

Several specimens of portfolios.



THE productions of six exhibitors are combined in this collection. The articles thus included comprise specimens of cloth, paper-hangings, leather in the form of boots, shoes, gloves, &c. Mineral manufacture and hardware. Attention is claimed among these by the specimens of mosaic pavement made with small bricks of different colours; this kind of pavement being in extensive use in several places on the Continent.—R. E.

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| <p>1 GODSCHAUX BROTHERS, <i>Schleifmühl, near Luxemburg</i>
—Manufacturers.
Specimens of buckskins and lamas cloth.</p> <p>2 LAMORT, JACQUES, <i>Luxemburg</i>—Manufacturer.
An assortment of paper-hangings, variously coloured and gilded, satin and embossed.</p> <p>3 WEMMER, F., <i>Luxemburg</i>—Manufacturer.
Hunting boots. Shoes and boots, with single and double soles.</p> <p>4 L'UNION (DE) GANTERIE FRANÇAISE, <i>Luxemburg</i>—
Manufacturer.
Kid and lambskin gloves, for ladies and gentlemen.</p> | <p>White and coloured kid and lambskins. Gold, bronzed, and black glazed kidskins.</p> <hr/> <p>5 BOCH, J. F., <i>Septfontaines, near Luxemburg</i>—
Manufacturer.
Mosaic pavements, composed of very small bricks of baked clay, and used in lieu of stone and marble flags. The floors of several churches and houses in the Grand Duchy are inlaid with them.</p> <hr/> <p>6 METZ, A., & Co., <i>Eich, near Luxemburg</i>.
Cast-iron stove; German eagle, as on the fortress of Luxemburg.
Cog-wheels for machines.</p> |
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Commissioner, M. ODERNHEIMER.

THE most valuable and interesting series in this collection to the geologist and metal manufacturer is the very complete group of ores and minerals exhibited by the Government Mining Engineers. The specimens of hæmatite, of nickel ore, of copper and of manganese ore, are particularly deserving of notice, together with the information given as to their locality and production. Specimens of clay are exhibited also. These, with some samples of ultramarine, some miscellaneous articles, and manufactures in ivory, complete the number. The exhibitors amount to thirteen: under the first numeral, however, a considerable number must be included.—R. E.

1 THE GOVERNMENT ENGINEERS OF MINES—in the name of the Mining Proprietors.

Grey copper ore (Fahlerz), containing from 4 to 16 ounces of silver in the cwt.

[The grey copper ore is found united with lead ore in greater or less quantity, on which partly depends the quantity of silver contained in the smelted lead.]

Specimens of lead ore; sulphuret of lead, containing from 1 to 2 ounces of silver in the cwt.; by the admixture of grey copper ore, a larger quantity of silver is obtained.

[The mines of lead ore in Nassau are in general of old date, but many veins have yet to be tried, or to be opened to a greater depth.]

Carbonate of lead, the result of oxidation in the upper and middle parts of the veins, containing sulphuret of lead. The quantity of silver in this carbonate of lead is not inconsiderable. The mines are near Oberlahnstein and Ems.

Phosphate of lead, found in combination with carbonate of lead. Remarkable for its crystallization. From the lead mine near Ems.

Specimens of copper ore; from Dillenburg, copper pyrites, containing 30 per cent. of copper.

[The copper of Nassau is of the best quality, but the quantity produced is, at present, small. Engines for draining the deeper mines are about being erected.]

Specimen of Kupferindig (sulphuret of copper, containing 66 per cent. of copper); found associated with copper pyrites. Ferruginous red oxide of copper with malachite (green carbonate of copper); the produce of oxidation in the upper part of the copper veins.

Zinc ore, sulphuret of zinc. This ore fills part of the lead veins, and has been used of late years for producing metallic zinc.

Manganese ore, pyrolusite (the greatest part) and psilomelane, peroxide of manganese. District of the Lahn.

[The mines of manganese ore in Nassau have been opened chiefly within the last 15 years, and yield a vast produce.

The quantity raised every year is above 20,000 tons English, and the ore is exported to all quarters of the world. 1,200 persons are employed in the mines and washing-mills. Manganese ore is used for extracting chlorine in the manufacture of soda from common salt; for glazing in potteries; for whitening glass, &c.]

Specimens of iron ores, red hæmatite, red oxide of iron.

[The red hæmatite is raised in numerous mines, in very great quantity: it yields iron of superior quality, in the furnaces of Nassau, worked with charcoal. This iron ore is also exported to the coal districts of Germany and to France, for the purpose of improving iron. From 1,500,000 to 2,000,000 cwts. of iron ore are raised every year, of which the half is smelted in Nassau. Part of the iron ore contains calespar, and is used in that state as the best admixture for smelting. Magnetic iron ore, oxydulated iron. This ore is found united with red hæmatite. Hydrous oxide of iron, brown hæmatite—*stilxnosiderite*. This ore is found in Nassau in great quantities: it is chiefly worked for exportation, and is used especially for producing hard steel. Spathose iron; from Hachenburg. There are only a few mines of spathose iron in Nassau, near the Prussian country of Siegen; the ore, and the steel produced from it, are much esteemed.]

Specimens of bituminous coal or lignite—of remarkable wood-like character, covering a space of about 100 English square miles; used in Nassau and the neighbouring countries as the principal household fuel. For technical purposes the lignite is valuable. At present the yearly produce amounts to 1,200,000 cwts., but the quantity which can be raised is incalculable.

Slate. The mines of slates in Nassau near the Rhine and Lahn are of good quality.

Heavy spar, sulphate of barytes.

[This spar was formerly not worked in great quantities, but new discoveries of rich veins promise a considerable

produce. The heavy spar is used as the basis for many sorts of colours, in order to give them more body. White lead is very commonly adulterated with heavy spar. It is also used in potteries for glazing and mixing with clay.]

Fuller's earth. In some parts of the country deposits of this substance have been worked for a long period. Extensive deposits have been recently found in other districts.

Specimens of potter's clay, and coloured earth; ochre.

[Nassau is very rich in potter's clay, of the best quality; it is partly exported in a raw state under the name of Valendar clay. The manufacture of earthenware in Nassau is susceptible of greater development; a great drawback hitherto having been the cost of fuel. These clays are manufactured into stone-ware cruets, pots, cans, jugs, and hydraulic pipes of great solidity. There are also some manufactories of porcelain and fine pottery ware, clay tobacco pipes, and common earthenware.]

Samples of stone-ware, to show its mass. This stone-ware is extremely cheap, and is exported in great quantities.

[The duchy of Nassau, though of small extent, is singularly rich in mineral produce, and the variety is perhaps more remarkable than the actual quantity of such riches. A large part of the country is covered with basalt, but beneath and amongst this are schists abounding with small mineral veins, and alternating with altered limestones and marble. Mines have been worked extensively in the upper part of the valley of the Lahn, where the principal mineral produce is rich copper ore. A little to the west are masses of iron ore, amongst which the *stahlstein*, or sparry carbonate, is the most remarkable. There are also in many places veins of rich argentiferous galena, formerly worked to much greater extent than at the present day. Some of the mines also contain nickel, cobalt, zinc, and manganese in considerable quantities. Dillenburg may be regarded as the capital of the mining district of Nassau.

The beds of lignite, near Hachenburg and elsewhere in the country, are very thick, and contain a large quantity of material; but hitherto they have not been economically worked, nor has the lignite been used to any extent compared with the large supply that exists.—D. T. A.]

2 LOSSEN, M., *Iron Foundry, Michelbach*—Proprietor.

Iron. Samples of pig, cast, and bar iron. Grey tender pig, or cast iron, with specimens of slags and artificial plumbago. White hard pig and cast iron. Plate of cast iron, direct from the high furnace. Samples of cast iron bars, 3 feet long and 1 inch square, broken by deflecting them in the middle to the extent of one inch. Samples of bar iron from the puddling process, once refined. The bars rolled and bent, in right angles, and perforated by hammering when cold. Samples 2½ inches broad, and ¼-inch thick, worked on edge with hammers of 13 lb. weight, without showing any cracks. Iron bar, bent when hot at a right angle; the one end forged to show the texture. Samples, bent to breaking. Iron axle (with box of cast iron), bent cold.

3 THE ISABELLEHUTTE SMELTING WORKS, near *Dillenburg*.

Specimens of nickel and compositions of it.

[Nickel is found in combination with sulphur, and mixed with iron and copper pyrites. The separation of the metal is now performed, not by smelting, but by solution in acids.]

Specimens of nickel, in cubes, as it is brought to market, containing 97.5 per cent. of nickel, .5 per cent.

of copper, .9 per cent. of iron, 1.1 per cent. refuse and loss. German silver, bar, polished on one side (the composition being 8 copper, 3 nickel, 3½ zinc); and German silver plate, polished on one side (composition, 8 copper, 3 nickel, 6½ zinc).

Combination of arsenic, nickel, and copper with sulphur and a small portion of iron, the produce of the smelting process.

[In the mines 7,000 hands are occupied, and 2,000 more at the smelting works, or, in all, 9,000. The population dependent upon the mining industry is, therefore, equal to 45,000, or the tenth part of the whole population of Nassau.]

Specimens of clay tobacco-pipes: exhibited for the cheapness of produce, and to show the quality of the pipe-clay. Specimens of ochre and earth colours.

4 ROSSLER, FREDERIC VON, *Westerburg*.
Coke manufactured from bituminous coal.

5 THE MARBLE MANUFACTORY AT *Diez*.

Specimens of manufactured marble, including vases, candlesticks, snuff-boxes, and marble columns.

[The marble of Nassau forms part of the transition rocks of that country. This marble, of different tints—red, black, yellow and grey—is worked in manufactories and single workshops in the country near Lahn. Monuments, columns, chimneys, vases, chimney-pieces, &c., are made of it. The quality of the marble of Nassau is not very excellent, as the fossiliferous limestones which put on that character are rather metamorphic than truly crystalline. They are thus brittle, much veined, and of irregular texture; but many of them are very beautiful and well adapted for ornamental purposes. The specimens exhibited are for the most part small, but possess some interest.—D. T. A.]

6 LEIGHER, A., & Co., *Wiesbaden*—Manufacturers.

Samples of red burnt terra cotta clay.
Articles manufactured of the clay. Columns and hanging flower-vases, to show the quality of the material and the style of workmanship.

7 ROEHR, FRIEDRICH, *Wiesbaden*—Manufacturer.
Samples of ultramarine, free from adulteration.

HECKEL, T. A., *Biebrieh*—Manufacturer.

Clarionets, in A, B, and C, of cocoa-nut wood, and bassoon, of maple wood with valves of German silver, of new and improved construction.

9 WINGENDER BROTHERS, *Hoehr*.

Assortment of clay tobacco-pipes.

10 MUEHLENBACH & THEWALD, *Hoehr*.

An assortment of clay tobacco-pipes.

11 MONTAG, LUDWIG, *Wiesbaden*—Manufacturer.

Basket of black buffalo-horn, inlaid with white Brazilian horn.

12 BEESTEN, J. VAN, *Wiesbaden*—Artist.

Models of fruits, embossed in wax.

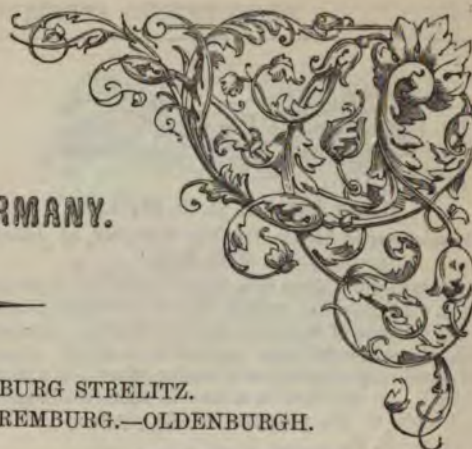
13 GEISMAR, LUDWIG, & Co., *Wiesbaden*—Manufacturers.

Gun press, overlaid with staghorn, the ornaments in ivory, 7 ft. high, 4 ft. broad, and 1½ ft. deep.

Cup in ivory, with figures in alto and basso relievo, subject "Christ blessing the children."

Brooches in ivory, of various designs. Bracelets in ivory, of seven links, representing figures of game.

"Porte-monnaie;" paper-knives; letter-case, and letter-weights.



NORTH GERMANY.

HANOVER.—MECKLENBURG STRELITZ.
MECKLENBURG SCHWERIN.—NUREMBURG.—OLDENBURGH.



NORTH AREAS, G. H. 65, 66; I. 55 to 57.

Commissioner, F. STAHLSCHMIDT, Esq., 14 Mark Lane.

THE productions of this kingdom are represented by ten exhibitors. They contain specimens of raw material, a few manufactures, and objects of art. Among the former are samples of asphaltum, employed to a large extent for pavement: an electro-magnetic telegraph, on the registering system of Professor Morse of America, is also exhibited, with some improvements and additions of the exhibitor's. A bronze lustre for sixty candles, and busts in the same metal, represent the Fine Arts' Class, and specimens of linen and leather the textile manufacture, and that of the preparation of skins, &c.—R. E.

1 HENNING, *Limmer, near Hanover.*

Specimens of asphaltum:—Raw asphaltum stone; asphaltum earth; melted asphaltum in cakes; asphaltum prepared for covering roofs and pavements; pavements of stamped asphaltum earth.

2 HOSTMANN, C., *Celle.*

Ink for typographic and lithographic printing, with specimens of soot and boiled oil, together with printed proofs.

3 TANNER, C. D., *Hanover.*

Brace of pistols, in case; gun with two double barrels in case; rifle in case.

4 LOHDEFINK, W. A., *Hanover.*

An electro-magnetic apparatus for telegraphs, on Morse's system, together with a subsidiary apparatus ("Relais"), and a paper roller.

[Morse's system of electro-telegraphic communication is a variety of the registering telegraph. The arrangement includes the following features:—A strip of paper was made to pass slowly under a pencil, in connection with an electro-magnet. The pencil traced a straight line until the magnet was thrown into action by an electric current through the wire. Its course was then slightly altered, and in this manner a sign was made on the paper. Such being the principle, it is easy to see its practical application to the purpose of communicating intelligence.—R. E.]

5 HANSEN, JOHN GODFREY, *Hildesheim.*

Piece of sail-cloth; piece of linen (called "Franzleinen").

6 SCHULTZE, DANIEL, *Bodenteich, Lüneburgh.*

Various samples of linen; some of raw or unbleached linen; and some of linen yarn and flax.

7 WAGNER, CHARLES AUGUSTUS, *Hanover.*

A hat, with a felt body, covered with plush; another, the body of cotton cloth, covered with plush; another hat, also covered with felt. These hats are made upon a new principle, which, besides improving the shape, enables them to be made exceedingly light.

8 BERNSTORFF & EICHWEDE, *Hanover.*

Gilt bronze lustre for sixty candles.
Bust in bronze, of His Majesty the King of Hanover.
Small bronze statue representing the painter Holbein.

9 HERTING, CHARLES, *Einbeck.*

Specimen of paper-hanging.

10 FRIEDRICH, J. P., *Norden.*

Three calf-skins, dressed.



NORTH AREAS, G. H. 65, 66; I. 66.

Commissioner in London, DR. VON VIEBAHN, 43 Albion Street, Hyde Park.

FOUR exhibitors from this State appear by their products. Among the articles shown are some adapted to the purpose of warming and ventilation. A specimen of ornamental work applied to an object of once universal employment—a spinning-wheel—is also exhibited. In addition is a new extract from madder applicable to the purposes of the dyer and calico-printer.—R. E.

1 BENECKE, WILHELM, *Neustrelitz*—Manufacturer.

Portable apparatus of tin-plate generating steam. Brass stoves for heating rooms by steam.

2 LANGE, CARL, *Neustrelitz*—Manufacturer.

Air-tight door to a stove for heating rooms, by which smoke is entirely prevented and fuel economised.

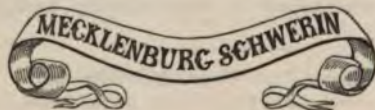
Drawing of a stove, constructed on the principle of the safety-lamp of Sir Humphry Davy.

3 SCHARENBERG, ADOLF, *Neustrelitz*—Inventor and Manufacturer.

Finest madder-extract for dyeing; produced by a new method.

4 GUNDLACH, CARL, *Wesenberg*—Manufacturer.

Spinning-wheel, with inlaid work, consisting of 450 pieces.



NORTH AREAS, G. H. 65, 66; I. 66.

Agent in London, M. FIGLHEIM, 14 Tavistock Street.

THE contributions of this State include several of practical value. The distilling apparatus exhibited forms an appropriate adjunct to the excellent collection of charcoal of different kinds, also alum. The latter product—of which the production in our own country is comparatively trifling and unimportant—represents a highly-interesting department of industry carried on to a most important extent in many continental States, where charcoal forms the principal fuel employed for domestic and for manufacturing purposes. In its preparation other products are obtained, such as tar, and impure acetic acids. The application of the latter to the above, and in combination, in the form of a salt of iron, is illustrated by one of these exhibitors. Specimens of the gunsmiths' art, of cutlery, of carving, and of textile products, complete the list of these articles.—R. E.

1 STOLZENBERG, J., *Genöyen*.

Apparatus for distillation.

2 SCHMIDT, J., *Güstrow*.

Three guns.

3 GERBER, C. H. A., *Güstrow*.

Two table-cloths.

5 MEYNE, J., *Schwerin*.

Soup-tureen of German silver.

6 MEYER, W., *Warnemünde*—Proprietor.

Charcoal of different qualities of wood for brass, iron, and copper foundries, and other mechanical purposes.

Charcoal prepared for the use of distillers and rectifiers.

Charcoal of soft wood, pulverised and manufactured for manure.

Cinders of wood of ready inflammability.

Roasted beech-wood, for housekeepers' use.

Roasted pine-wood, for the use of steamboats and railroads. It lights quick, and generates steam in a very short time.

Peat charcoal, in large pieces, for all technical purposes, and where an intense and lasting heat is required. Manufactured in ovens of the exhibitor's invention.

Peat charcoal, prepared for distillers and rectifiers.

Peat charcoal, pulverised when dry, for the use of manure and as a fertiliser.

Prepared peat charcoal manure. The best quality of peat charcoal, pulverised in its dry state, is mixed with other liquid manures, containing gaseous matters, such as ammoniacal vapours, &c.

Pyroligneous acid, prepared for the purpose of preserving hides, furs, sailcloth, ropes, hemp, &c.

Pyroligneous acetate of iron for preserving timber while actually growing, by impregnation.

Preserved timber from trees, to which a solution of the acetate of iron was applied while in actual process of growth. A bedstead polished.

A bedstead unpolished.

Timber preserved by brushing with, or steeping in, this acetate of iron.

Saw-dust prepared with pyroligneous acid for the preservation of smoked hams, sausages, or other meat sent to a tropical clime.

Hides preserved with pyroligneous acid, and not tanned.

Hides preserved with pyroligneous acid, and hereafter tanned.

Wood for common lucifer matches.

Wood "percussion needles." Matches manufactured by a machine invented by the exhibitor.

[It is a well-known fact that the destructive distillation of wood in iron retorts yields an acid product which is largely used in the arts, in chemistry, and in medicine. The name of this product, pyroligneous acid, indicates its origin. It is an impure acetic acid, containing generally a strong impregnation of the empyreumatic volatile acids of the wood. To these in part are due its preventive effects upon organic substances. But acetic acid alone is, as is well known, a powerful antiseptic. The application of a solution of impure acetate of iron to the preservation of timber while yet standing in the forest is interesting.—R. E.]

8 BEAR, H., *Rostock*—Manufacturer.

An ornament of furniture, carved in lime-tree wood, in a fancy style, called by the French "baroque."

9 BAHRT, H., *Schwerin* (City)—Manufacturer.

Seven concave razors, damasked.

10 YERBER, C., *Güstrow, Mecklenburg*—Manufacturer.

Two half silk-damask table-cloths, embroidered, the one with the arms of England, the other with those of Mecklenburg.



THE only exhibitor from this country has sent two specimens of skill in metallurgical manipulation. Of these, the first illustrates the extraordinary ductility of brass, under proper management, the other that of iron. The fine wire thus produced is applicable for the manufacture of wire gauzes, that of iron being used for the miner's (Davy) safety-lamp.—R. E.

FUCHS, MARCUS, *Nuremberg*—Manufacturer.

One pound extra fine brass wire, drawn to the length of 76,000 feet.

One pound of extra fine iron-wire, for mining-lanterns, drawn to the length of 41,000 feet.



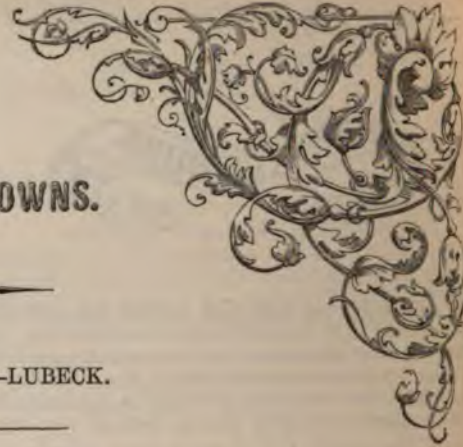
NORTH AREAS, G. H. 65, 66; I. 66.

Agent in London, M. PIGLHEIM, 14 Tavistock Street.

THREE exhibitors represent Oldenburgh in the Exhibition. Their productions are flax yarn, prepared quills, and a model of the famous Castle of Heidelberg. The latter is made to a scale.—R. E.

- 1 CASSEBOHM, T. H. *Oldenburgh*.
A model of Heidelberg castle, carved in corkwood, in exact proportion to its size on the scale of $\frac{1}{12}$.
- 2 BRAMLAGE, A. *Lohne*.
An assortment of manufactured quills.
- 3 SHARNHORST, C. *Oldenburgh*.
Flax thread, spun by the hand.





HANSE TOWNS.

HAMBURGH.—LUBECK.



NORTH AREAS, G. H. 65, 66; L. 66.

Commissioner in London, C. NOBACK, Esq., 20 Spring Gardens; Agent, M. PIGLHEIM, 14 Tavistock Street.

THE number of exhibitors representing this State is about one hundred and twenty, and objects in a variety of classes are sent for exhibition. Among the raw materials are some specimens of manganese ore, sugar, starches, &c.; but these are few, and comparatively less interesting than the articles found in other Classes. Several musical instruments, a rose-engine lathe, clocks, &c., deserve attention. Some examples of embroidery and textile fabrics are also exhibited. In the manufacture of lacquered wares and iron-work the artificers of this State have enjoyed much celebrity, and several manufacturers of such articles have sent specimens of their workmanship for exhibition. In

furniture, also, this collection is well supplied, a number of articles in rosewood and ebony exhibiting the peculiar style of the Hamburg makers. In the fine arts are several finely-carved ivory and glass goblets, and some good specimens of carving in wood. Among miscellaneous objects attention will be drawn to a display of fifteen hundred walking-sticks, impressively arranged.—R. E.

1 MEYER, T. W.—Producer.
Specimens of manganese ore.

2 HILDEBRAND, C. G.—Producer.
Glaziers' writing diamonds.

3 REESSING, H. B.—Producer.
Samples of refined sugar and sugar-candy.

4 WAGENER, J. C. L.—Producer.
Samples of refined sugar.

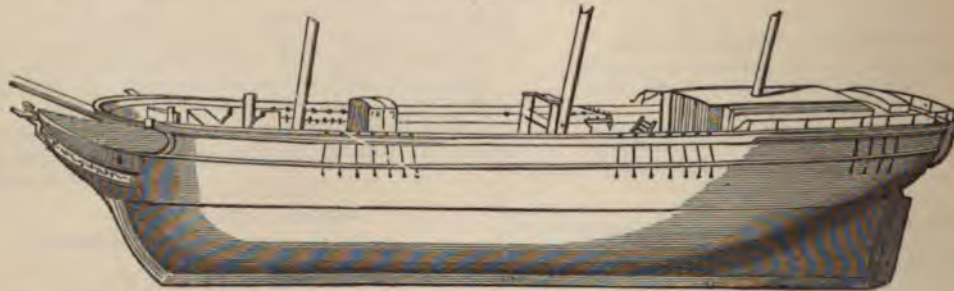
5 PETERSON, JOHN—Producer. (Agent, T. Peterson,
Water Lane.)
Oil-cakes.

6 REYNOLD, A. & G.—Producers.
Fire-engine.

7 CROISSANT & LAUENSTEIN—Producers.
Phaeton, made of rose-wood, with carvings, bronze
springs, &c.

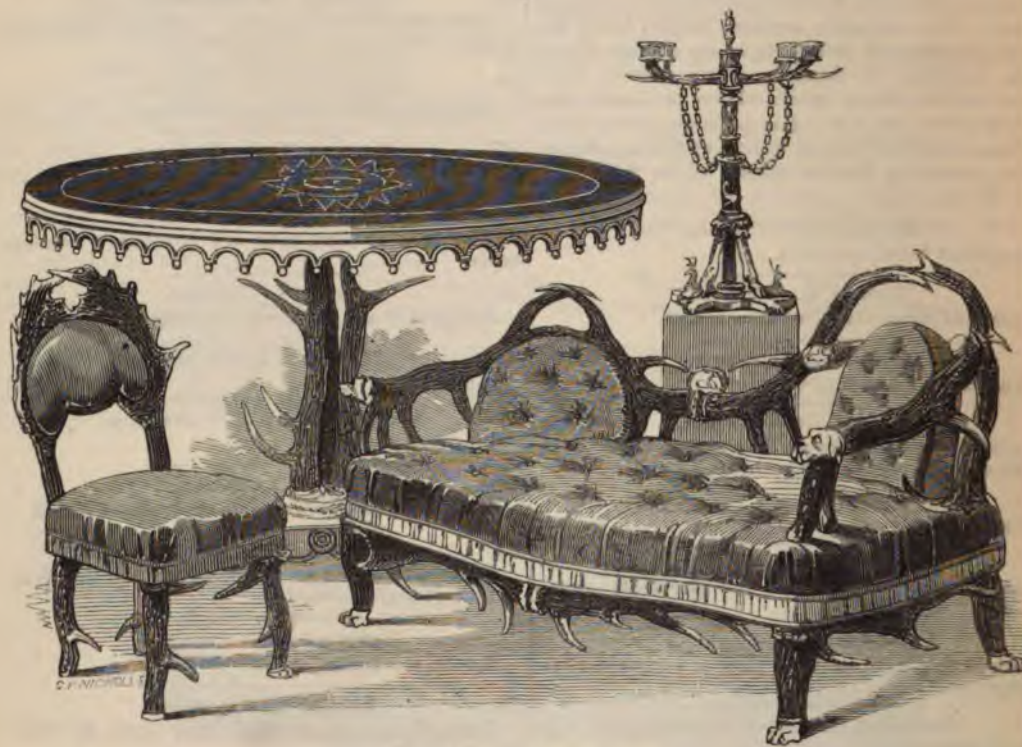
8 FRIDRICHSEN, K. A.—Producer.
One, three, and two-sheaved blocks for ships.

9 BUFE, T. C. & SON, *Cuxhaven*—Producers.
A brig and barque, with drawings; the barque now
building. A side view of the hull of this barque is pre-
sented in the cut below.



- NIKBERG, J. L.—Producers.**
adulum clock. Patented by Dr. Moenck.
- BRÖCKING, W.—Producer.**
netical pendulum clock; clock with half-
m.
tion of the electric principle to clock-work
is recent. Next to the invention of the
agnetic telegraphs, it may be regarded as
ost successful applications of this subtle
ctical purposes. The attractive force of
ets, so rendered by induction, through the
f coils of copper wire around pieces of
agency employed to set the train of wheels
Such clocks, when well made, exhibit
y and regularity of movement, and several
s are in the Exhibition.—R. E.]
- MGARTEN & HEINS—Producers.**
ianoforte.
- SCHRODER, C. H.—Producer.**
ianoforte.
- RUMMS, H.—Producer.**
noforte (piccolo).
- ELLEB, F., & SON.—Producers.**
- DE RODE, F.—Producer.**
e-drums, with newly-invented mechanism.
- KOHN, M. A.—Producer.**
e lathe.
f lathe which is called a rose-engine is one
ity, and, when skilfully employed, is capable
he most beautiful specimens of ornamental
principle is extremely simple; but it can
ndered intelligible in the absence of dia-
less on inspection of the machine itself.
ordinary cylindrical form produced by the
the rose-engine produces, among other
ders which, on section, exhibit an indented
bling the arrangement of the petals of a
- PEPPER, OTTO—Producer.**
urled horse-hair.
- WAMOSY, D.—Producer.**
alves' skins, and other leather.
- KRUGER, A.—Producer.**
riding-saddle.
- GERBERS, ED.—Producer.**
art on varnished linen cloth. Varnished
t paper for drawing.
- MÖLLER, C. H. A.—Producer.**
s.
- LADE, ED.—Producer.**
corahs; designs and plates for corah-
- RNOT & BEREND—Producers.**
printed on wool; piece of printed woollen
- SSMAR & HABLOFF—Producers.**
inted and painted table-covers.
- 26 **HEISER, F. L.—Producer.**
Coloured curtains.
- 27 **MUCKENHEIM & ALPERS—Producers.**
Two window-blinds, ornamented with a medallion and
a landscape.
- 28 **VERHEIM, J.—Producer.**
Window-blind, ornamented with a landscape.
- 29 **WINDMÜLLER BROTHERS—Producers.** (Agent,
W. Meyerstein, 15 Watling Street.)
Printed mousseline-de-laine cravats, shawls, &c.
- 30 **REY, G. E.—Producer.**
Ladies' robes, embroidered.
- 31 **SHELLE, J. G.—Producer.**
Embroidery.
- 32 **GERSON, HENRIETTE—Producer.**
A darned napkin, and a piece of lace also darned.
[The exhibitor has cut out of this napkin a hole of some
inches square, and then filled up the hole with yarn.
This lace, in which 10 holes of different sizes were cut, had
been sealed in its defective state by the Committee, and
was brought back by the exhibitor, without any visible
mark of darning.]
- 33 **GOMPERTZ, B.—Producer.**
Hair-embroidered pictures of Her Majesty Queen Vic-
toris and the Prince of Wales, and of the Hamburg Ex-
change.
- 34 **CAHEN, S. J.—Producer.**
A white felt saddle-cloth, with a brown beaver border,
and the arms of Hamburg at each corner.
A silk hat and a beaver hat.
- 35 **CURJAE, TH.—Producer.**
Lady's beaver bonnet (drab). Children's kerseymere
bonnet. Beaver hat. Various silk hats.
- 36 **SAHLBERG, C. F. G.—Producer.**
Gentlemen's and ladies' boots and shoes.
- 37 **SCHOOST, W. C.—Producer.**
Gentlemen's and ladies' boots and shoes.
- 38 **MAGDALINSKI, J.—Producer.**
Waterproof shooting-boots and gentlemen's dressing-
boots.
- 39 **KINOL, A.—Producer.**
Jockey-boots and gentlemen's dressing-boots.
- 40 **HENSEL, C. J.—Producer.**
Ladies' shoes.
- 41 **KROLL & KOPP, F. W.—Producers.**
Gentleman's laced coat.
- 42 **COHN, L. H.—Producer.**
Gentleman's cap, without seam, made of a new stuff.
- 43 **RITTEB, W.—Producer.**
Set of gimlets and set of augers, on improved prin-
ciples, for metal and wood.
- 44 **HÜNTEN, J. A. F.—Producer.**
Circular saw for surgical use.
- 45 **BERENS, W.—Producer.**
Engraved and engine-turned brass plates for book-
binders and burnishers.

- 46 SCHULTZE, F.—Producer.
Engraved music plates.
- 47 LEHRMANN, J. J.—Producer.
Parrot's cage of brass.
- 48 SCHULTZ, F. J.—Producer.
Bird-cages, blue lacquered, brown lacquered, and brass.
- 49 SCHULTE & SCHEMANN—Producers.
Tea comforts; coal-vases, coal-bucket and zinc bath; also a set of screw clubs, made by E. Rochlitz; a bathing-vat, spelter-plated inside, lacquered outside, made by J. A. Lehmann.
- 50 RICHTER, J. M. S.—Producer.
Parrot's cage of brass.
- 51 HEINE, G. T.—Producer.
Parrots' and birds' cages of brass.
- 52 FLIERSHEIM, J. M.—Producer.
Fuel box; tea comfort and kettle.
- 53 KORLAN, G.—Producer.
Frames for daguerreotypes.
[The vast extension of the beautiful art discovered by Daguerre has called into existence a number of trades of more or less consequence. Among these is that of the maker of frames for daguerreotypes. These frames are often made of very simple materials, but are occasionally of a more costly kind. They are rendered necessary, in consequence of the liability to injury of the delicate surface of the impressed plate, even after it has been well gilded by the usual process.—R. E.]
- 54 BRAHMFELD & GUTRUF—Producers.
Silver writing-stand.
- 55 MEYER, DIEDR.—Producer.
Chimney-screen; wine-coolers; tea-plate; night-lamp with two lithophanic plates. A parrot's cage of brass; a lacquered tray, ornamented with a picture.
- 56 HILDEBRAND, C. L.—Producer.
Window-glass, glass letters, and a glass box. Diamonds and planes for cutting glass and window glass, glaziers' hammers.
- 57 WRIGHT, J. G.—Producer.
Soda-water bottles.
- 58 HANSA, —, Producer.
Various specimens of earthenware potteries.
- 59 ALBRECHT, A.—Producer.
Varnished chimney-screen.
- 60 RAMPENDAH, H. F. C.—Producer.
Looking-glass with stag-horn frame.
Various specimens of stag-horn furniture. These are represented in the illustration below.
- 61 HUEBENER & POHLE—Producers.
Sofa looking-glass in rococo style frame.
- 62 KORLAN, G.—Producer.
Three looking-glasses. A window-blind, ornamented with a landscape.
- 63 BRUENING, C. D.—Producer.
Writing bureau.
- 64 HAGEN, T. F.—Producer.
Ebony sideboard.



Rampendahl's Stag-horn Furniture.



- ENGELS, H. W. M.**—Producer.
of rosewood (Jacaranda), ornamented with carvings in ebony.
which sometimes give the name Jacaranda to derive the idea that the plant called Jacaranda iliana yields it, which is not the case. The name has perhaps been the origin of Palisander badly written.—J. L.]
- SENGLE, J. G.**—Producer.
of rosewood, inlaid, and ornamented with shells, marble slabs, and carvings.
- ADIKES, J. D.**—Producer.
of rosewood, inlaid and ornamented. This is represented in the accompanying Plate, 208.
- GESELLER, H.**—Producer.
his arm-chair of rosewood; lady's arm-chair to do.
- FLAMBECK, C. F. H.**—Producer.
Tables, with inlaid work, representing in the setting of the emperor of Germany, Charles V., I., king of France. The border represents I. and some of the Farnese family, to which it belongs.
- RAMPENDAHL, H. F. C.**—Producer.
Chest, inlaid with hart-horn and ivory work, which represents a peculiar style of ornamentation, and is surmounted by a clock of which the dial is represented in the adjoining Plate, 178.
- FAULWASSER, C. E.**—Producer.
Writing-table, inlaid with bronze and marble, with inlaid work; sundry boxes.
- KÖHLER, J. H.**—Producer.
of rosewood, with inlaid work.
- BEY, H.**—Producer.
Writing-table, with reading-desk, inlaid and ornamented with gilt metal. A chess-board table.
- LOOSE, C. L.**—Producer.
Tables, with inlaid work; lady's work-table, with sundry boxes, with inlaid work.
- LOOSE, J. R.**—Producer.
Tables, sundry boxes, with inlaid work.
- MULLER, W. O.**—Producer.
Tables, with inlaid work.
- KOPKE, C. J. C.**—Producer.
Writing-table in rosewood.
- HEYMANN, J. D.**—Producer.
Sofa and chairs. Rosewood easy-chair.
- ERNST & FIGLHEIN.**—Producers.
Inlaid work; sofa; rocking-chair; sylphe.
- KRUGER, G. H.**—Producer.
Sofa; rocking-chair; arm-chair, &c.
- MEHNE, PH.**—Producer.
Wood work-table, ornamented with marquetry in ebony.
- 82 **KOLL, J. N.**—Producer.
Rosewood chairs. Side-table, with marble slab.
- 83 **JANTZEN, J. C. F.**—Producer.
Pattern card of turners' work.
- 84 **ECKERT, J. C. H.**—Producer.
Pattern cards, with different objects of mother-of-pearl and ivory work; pipe-tubes.
- 85 **UMLAUFF, AUG.**—Producer.
Pattern card of tortoiseshell combs.
- 86 **MEYER, H. C., jun.**—Producer.
Large, small, and square pattern cards, containing:—
1. 500 walking-sticks.
2. Samples of ivory, whalebone, ratans, &c., cut very fine.
3. Whips and rods.
4. A glass case of stick buttons and caricatures, cut out in bone, ivory, &c.
- 87 **HARTGE & HUBE.**—Producers.
Samples of sticks, whips, whalebone, canes, &c.
- 88 **ASPERN, W. M. V.**—Producer.
Lady's box (velvet).
- 89 **WÖBKE, H.**—Producer.
Tobacco pipes (Turkish clay). Genuine meerschaums.
- 90 **OLSHARDSEN, F.**—Producer.
Artificial flowers, arranged in a frame.
- 91 **LÖWENTHAL & Co.**—Producer.
Dolls' heads (wax and papier-maché).
- 92 **DOUGLAS, J. S.**—Producer.
Samples of soap.
- 93 **ENGELHARD, F.**—Producer.
Statue of Richard Cœur de Leon (bronze).
- 94 **KLEFT, BR.**—Producer.
Marble figure of the Saviour, in relief; two greyhounds in ivory.
- 95 **SCHILLER, J.**—Producer.
Girl, with a bunch of grapes. Model of Flora, plaster.
- 96 **ENGELHARD, W.**—Producer.
Relief in plaster, illustrating Northern mythology; a series of designs: model of the Lorley.
- 97 **BOHM, AUG.**—Producer.
Engraved glass goblet: subject—Battle of Alexander against Darius.
[This fragile material is often made the subject of a great expenditure of taste and labour. The art of engraving on glass has in a particular manner been practised with great success by continental artists, and the specimens frequently exhibited are extremely chaste and elegant. The depth of the cutting, and the delicacy of the outlines, require a well-annealed and a very pure material. As much of the continental glass is made without lead, a peculiar whiteness of tone is often observed in the engraved specimens.—R. E.]
- 98 **RAMPENDAHL, H. F.**—Producer.
Engraved ivory goblet.

- 99 **BOTHMANN, A.—Producer.**
Coloured church window in miniature.
- 100 **BÄCKING, F. W.—Producer.**
Two coloured glass transparencies; two table tops of marble mosaic; two table-tops in wood, cryloenastic work; two table tops, with paintings, fixed by steam.
- 101 **COHNIGES, LEON.—Producer.**
Transparent horn paintings.
- 102 **SCHREIBER & Co.—Producers.**
Music of the Opera "Lichtenstein," bound in velvet.
- 103 **KOHNKE, F. J.—Producer.**
A daguerrotype painting, coloured.
[The colouring of daguerrotype paintings is effected by using a delicate brush, and applying the colours to the surface of the silver plate in a state of fine powder. The colours are not generally very permanent. The effect of their application is more popularly pleasing than that of the uncoloured pictures; but the exquisite gradations of light and shadow observable in the latter, when untouched by human art, renders the appearance of paint generally distasteful to the daguerrotypist himself.—R. E.]
A glass plate, with inlaid figures, blue on one side and brown on the other. Subject: Cromwell at Marston Moor.
- 104 **SCHNAUTZ, WM.—Producer.**
A sausage.
- 105 **MAYER, Berlin.—Producer.**
Two green Orlean petticoats. Samples of horn and prepared horse-hair.
- 106 **BARTLEIS, J. C. M.—Producer.**
Wood carvings.
- 107 **ZUBER, J.—Producer.**
Different carvings in ivory.
- 108 **PRALE & BALLHEIMER.—Producer.**
Mahogany veneer; 54 plates of veneer cut out of a 3-inch piece.
- 109 **THIELE, jun.—Producer.**
A child's sofa.
- 110 **CLASSEN, F. F.—Producer.**
A fender for a stove.
- 111 **BUSS, W. H.—Producer.**
A bird-cage.
- 112 **SCHULTZ, G. S.—Producer.**
Two bronze candelabra.
- 113 **BOYE, C. T.—Producer.**
Spinning-wheel.
- 114 **MICOLCI, C. L.—Producer.**
Three Bibles—specimens of bookbinding.
- 115 **HARTOG, C. H.—Producer.**
A fire-screen—needlework.
- 116 **BÖEKEL, A.—Producer.**
Painted window-blinds.
- 117 **KÄHLER, A.—Producer.**
Lithographic writings.

- 118 **SEVERIN, E.—Producer.**
Needlework.
- 119 **APPAL, J. C.—Producer.**
Needlework, carpet, and balls.
- 120 **MEINKE, W. C.—Producer.**
Five flags.
- 121 **BEHNHATER, C.—Producer.**
A stove.
- 122 **BAHR, H. & Co.—Producer.**
Silk handkerchiefs.
- 123 **HANSEN-ESSEN, & MESSING WEAVERN-FABRIK, VON CARL TRILL, Schleslagers—Producers.**
Three iron forms for sugar refiners. Three cooking-vessels. All tinned.



NORTH AREAS, G. H. 65, 66; I. 66.

Commissioner, F. STAHLSCHEMIDT, Esq. 14 Mark Lane.

FROM Lubeck eleven exhibitors have sent articles for exhibition. These consist chiefly of manufactures, with two exceptions, in which oil-cakes and preserved food have been forwarded. The preparation of the latter articles constitutes, it is true, a manufacture of some importance, and of more on the Continent than in the United Kingdom. The other articles comprise guns, specimens of leather, embroidery, and fancy articles.—R. E.

- 1 **PLATZMAN, CONRAD—Manufacturer.**
Specimens of oil-cakes.
- 2 **CARSTENS, DANIEL HEINRICH—Manufacturer.**
Articles of preserved food—asparagus; young green pease; red cabbage; French beans; carrots; soup and bouillie; mock-turtle; roasted kid; chicken, with crawfish sauce; eel in jelly; liver-sausage; duck-pie; hare-pie; mushrooms with butter; juice of cherries; milk with sugar.
- 3 **BEHRENS, JOHAN CHRISTIAN—Manufacturer.**
Skin of genuine black morocco leather.
Specimen of glue.
- 4 **BECKMANN, JOHANN J. C.—Manufacturer.**
Lamb's skin, dressed with the wool.

FISCHER, CARL AUGUST—Manufacturer.
s; double-barrelled rifle, with case; fowling-piece;
le.

BRUNSWIG, GEORG HEINRICH—Manufacturer.
anned calf's and sheep's skin.
is of leather, pressed; the same, smooth, with
in peak, and with designs; pasteboard peaks
d, and with designs.

SPINGEL, WILHELM ANTON CARL, & Co.—
Designers and Manufacturers.
roidery, on silk canvas, intended for a fire-screen.
roidery commenced, to show the process, on per-
card-board, intended for a portfolio.

9 **STOLLE, CARL**—Manufacturer.
Patterns of embroidery commenced, with the silk,
wool, pearls, &c., necessary for its completion:—
On perforated card-board—bottle-stand; watch-case;
case for visiting-cards; thermometer; portfolio; calen-
dar; stand for lamp; basket.
On cotton canvas—cushion; on cotton canvas—foot-
stool.
On silk canvas—cushion.
Embroidery—a fire-screen on cotton canvas.

10 **BREYER, GEORG WILHELM**—Manufacturer.
A bed-screen of osiers.

11 **ROEPER, FRIEDRICH**—Manufacturer.
A lady's work-box, decorated with embroidery, velvet,
and bronze.





NORTH AREAS, F. 57, 58; G. TO J. 58; NORTH-EAST CENTRAL GALLERY, G. H. I. 58.

Royal Commissioner, G. GOOSENS, Esq., F.S.A., Union Hotel, Salisbury Square.

THE productions of this country comprise objects representative of every Class of the Exhibition, and are of a valuable and attractive character. In the Classes of Raw Materials and Produce are included several preparations for paints, cements, colours, &c. Agricultural produce and articles of food, particularly a large party of preserved meats, are also exhibited. Some of the chemical substances obtained from potato-starch, and used in the arts and commercially, are likewise represented. Among chemical substances of another kind, interest will be excited by the appearance of chrysammic acid, and some of the brilliant dyes obtained by its use. The textile productions of the Netherlands are represented by several exhibitors of silk, woollen—particularly blankets—and linen. Mineral manufactures and hardware have also their representatives. The agricultural implements, which exhibit peculiar features of adaptation to the continental system, deserve notice. An ingenious machine for making percussion-caps, completely automatic, and producing the caps at the rate of 8,000 an hour, is interesting. A large sugar-cane crushing-mill exhibits some peculiar, and, it is stated, improved features of general construction. Among philosophical instruments there is a dynamometer for ploughs. Models of bridges and locomotive apparatus, and some models of cutters and boats, illustrate the Classes to which they belong. Some good specimens of crystal chandeliers and flower-vases form an imposing feature in this collection. Articles of jewellery, a few sculptures, and books, complete this succinct summary of the objects contributed from the Netherlands.—R. E.

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| <p>1 BLEEKRODE, Prof. S., <i>Delft</i>, and ENTHOVEN, Lz., <i>Hague</i> (Agents, Enthoven & Sons, Moorgate Street, London)—Inventors.
Patent white paints from oxide of zinc, of different qualities. Yellow chromate of zinc. Green oxide of zinc. Chloride of zinc.
[The deleterious influence of white lead upon the health of the workmen employed, both in its use and in its production, has led to the search for some efficient substitute for it. Carbonate of barytes has been thus employed; and oxide of zinc is now becoming extensively used for a similar purpose. The latter preparation gives a good body to paint, and is almost innocuous.—R. E.]</p> | <p>5 DUURA (VAN) & VERSTEEVEN, <i>Rotterdam</i>—Manufacturers.
Prussian blue. Mineral blue. Chrome yellow. Chrome green. Water blue.</p> |
| <p>2 POORTMAN & VISSER, <i>Schiedam</i>—Manufacturers.
Sample of white lead.</p> | <p>6 DIEDERICH BROTHERS, <i>Amsterdam</i>—Manufacturers.
Specimens of Dutch water-colours.</p> |
| <p>3 STRATINGH & Co., <i>Groningen</i>—Manufacturers.
Sample of white lead.</p> | <p>7 VIS, ALBERT, <i>Wormerveer</i>—Manufacturer.
Pearl barley, of ordinary and fine descriptions.
Groats, dried and fumigated with sulphur brimstone, for use on board of ships. Groats, fine sort.
Starch, ordinary sort (crystallized). Blue, and white and blue, starch, in the form of pipes.</p> |
| <p>4 MAAS, HENDRIK, <i>Doorn-Heg, near Amersfoort</i>—Manufacturer.
Hydraulic cement, recently introduced.</p> | <p>8 OOMEN, ANTONIUS MARIA, <i>Ginneken, near Breda</i>—Manufacturer.
Collection of oil-seed cakes, for manuring fields and for feeding cattle. Cake prepared from the seed of the <i>Camelina sativa</i>, or "gold of pleasure." Hemp-seed cake, and linseed cake. A poppy-seed cake. Cakes prepared from the seed of the <i>Sesamum indicum</i>; from rape-seed, turnsol-seed, beechmast, and gourd-seed.
Glue, for the use of joiners and paper manufacturers.
Samples of gelatine.</p> |

- 9 DE HAAN, AART, *Rotterdam*—Manufacturer.
Sample of rape-seed. Rape oil, the first, second, and third qualities. It is said that the third quality gives a very clear light without smoke.
- 10 DEYL (VAN DER), LEENDERT, & SON, *Weesp*—Manufacturers.
Patent chocolate powder.
- 11 BOCKEN, CLEMENS, *Venlo, near Rotterdam*—Manufacturer.
Starch (pipe or patent), from the finest wheat flour. Starch, mixed with fine smalt.
- 12 PRINS, C. C., *Wormerveer*—Manufacturer.
Starch, known in Holland under the name of Urling's patent starch. Best starch, manufactured in the old Dutch mode.
- 13 SCHONEVELD & WESTERBAAN, *Gouda*—Manufacturers.
Products from potatoes, &c.:—White potato meal or farina. Grey farina for feeding cattle. Potato gum. Sago. White, yellow, and brown syrup. Residue for feeding cattle.
[The syrups alluded to are generally made from potato starch by an interesting process of chemical decomposition. They are employed for sweetening beer and other economical purposes.—R. E.]
- 14 VOORST (VAN), DIRK, & SON, *Zaandam*—Manufacturers.
Samples of Dutch wheat flour.
- 15 VISSER, NOLET, & CO., *Schiedam*—Manufacturers.
Samples of potato flour.
- 16 HEUVELDOP, H., *Leeuwarden*—Manufacturer.
Specimens of chicory.
Various articles of woollen manufacture.
- 17 VISSER, E. E., *Amersfoort*—Manufacturer.
Samples of yellow wax.
- 18 JORRITSMAN, ATHAN., *Dokkum*—Inventor.
Veterinary medicine for oxen, horses, and other cattle.
- 19 JANSSEN, N. H. A., *S. Hertogenbosch*—Manufacturer.
Preserved provisions, viz.:—
A large partridge-pasty, with truffles (called bosh-pasty), containing 150 partridges, and of the weight of about 250 lbs. This pasty has been made upwards of a year, and its quality is retained, as the bottoms of the boxes would swell in case of putrefaction.
Essence of ox, veal, and chicken broth.
Four tin boxes, the contents similar to those of the partridge-pasty.
- 20 SMITS, PIETER, *Utrecht*—Manufacturer.
"Polychromate," or "chrysammic acid," a new dye, from which a variety of other colours may be prepared.
[Chrysammic acid, if such be the acid here alluded to, has been known hitherto only to the chemist as the result of the action of nitric acid upon powdered aloes. Obtained by this process, chrysammic acid appears in golden crystals. The salts of compounds of this acid are remarkable for their brilliancy of colour; but their application in the arts is perfectly new.—R. E.]
Animal charcoal, in powder. Three specimens of animal charcoal, granulated.
- 21 ROOSEGAARDE, GERRIT JAN, *Zutphen*—Manufacturer.
Sole leather, from Buenos Ayres skins, dressed by the process of sweating, and curried.
Glue, made from the residue of Buenos Ayres skins.
- 22 BUYTEWEG, NICOLAAS, *Delft*—Manufacturer.
Various specimens of Holland hides. A Buenos Ayres hide. A sheep-skin, dressed. Samples of chamois leather, &c.
- 23 KOK ANKERSMIT, P., *Apeldoorn*—Manufacturer.
Morocco leathers, "basils," and "splits," in different colours and states of finish.
Calf-skins, for saddlers and bookbinders; bark-tanned.
- 24 HOOP, VAN DER JACOB, & CO., *Rotterdam*—Manufacturers.
Java ratans, cleaned and prepared.
- 25 CRAP HELLINGMAN, J. L., *Den Helder*—Inventor.
Mat, made of dried sea-grass (*Zostera marina*), for the use of florists and botanists. Manufactured at an institution established by the corporation of Den Helder, for the employment of the poor.
[*Zostera marina* is a native plant of the natural order *Zosteraceae*, or sea-wracks. It is collected and dried for a few economical purposes, such as the supply of a material for stuffing cushions, or for the preparation of such rude descriptions of matting as the one exhibited. It has some medicinal virtues in popular estimation, but these are of questionable existence.—R. E.]
- 26 HOOGEN, VAN DEN T., *Dordrecht*—Manufacturer.
Patent standing-ropes.
- 27 BEEFTINGH (VAN), N., & CO., *Katwyk, near Leyden*—Inventors and Manufacturers.
Rope, untarred, three-strand, and hawser laid, for ships' rigging; twisted in a concentric manner, with equal draught of the yarns, by patent machinery invented by one of the exhibitors. By this process, as many yarn-conductors and tubes are made use of as there are layers of yarn to be twisted into each strand. The result is, a more regular position of the yarns, in concentric layers, and a greater equality in the draught of the yarns, each layer of yarn being submitted to the pressure of a separate tube.
[By this process, the rope, in proportion to its size, or the number of yarn layers of which it is composed, not only acquires greater strength, but, at the same time, with an equal number of threads of the same yarn, becomes lighter and of less circumference, as appears from a number of experiments made by order of the Dutch Government, in 1845 and 1846. These experiments proved that a 7-inch rope, manufactured by this process, possesses an advantage of 5 per cent. in weight and 10 per cent. in strength.]
- 28 LAFEBRE, ABRAHAM, *Gouda*—Manufacturer.
Curtain cord. Strong twine and cord for fishing purposes made of Dutch shell hemp. A drum cord and forage loop of Dutch shell hemp.
- 29 DIRKS, H. J., *Dordrecht*—Manufacturer.
Brooms and brushes: including hair brooms; carpet brooms, with fine short hair; cobweb brushes; dusters; ships' scrubbing brushes; house scrubbing brushes; carpet, tar, greasing, and painting brushes.

- 30 CATZ & Co., P. S., *Amsterdam*—Manufacturers.
Specimen of horse hair (drawn), for violin bows. Other specimens, including extremely long, for weaving cloth for couches; ordinary length, for weaving cloth for seats and benches; short, for weaving sieve-cloth, used also for brushes; and spun, extremely elastic.
Specimens of ordinary quality, for stuffing chairs and mattresses.
[The hair of the horse is a most important article to the manufacturer. Two kinds are recognised—*curly* and *straight*.
The preparation of hair for the manufacture of damask hair-cloth and other fabrics, consists essentially in steeping it in an alkaline liquid until it is fit for use. It is subsequently dyed. When of the desired colour and suppleness, it is woven in an ordinary loom, and hot-calendered. Hair-ropes are formed as other ropes. Hair for stuffing is formed of the requisite elasticity by boiling such ropes so as to give to their fibres a permanent tortuous springy character.—R. E.]
- 31 HASE, JOHANNES HUBERTUS, *The Hague*—Manufacturer.
A cloak, muff, and ruffles, made from the feathers of the *Colymbus cristatus*.
Muff, made from the feathers of the marabou.
[Much value is attached to the plumage of the under-surface of the great crested grebe, a large water-bird distributed throughout the greater part of Europe, especially where there are extensive fens and lakes, and extending its range to parts of Asia, Africa, and North America. It is a swimmer, rarely flying or walking. It is the *Colymbus cristatus* of older, *Podiceps cristatus* of later, ornithologists. Among British birds it is the largest of our divers. The skin of the male bird is most valued.
Marabou feathers are the under-tail coverts of certain kinds of stork, especially *Ciconia argala* and *C. marabou*. They inhabit tropical Asia and Africa. The adjutant, or gigantic crane of India, is one of them, and furnishes the best feathers. The Marabou storks are scavengers; the Indian species stands six or seven feet high.—E. F.]
- 32 WARNAR, WILLINCK, *Amsterdam*—Manufacturer.
Wool velvet, in different colours, for furniture and carriages; known under the name of "Velours d'Utrecht."
- 33 VREDE, PAULUS & HENDRIK, & Co., *Tilburg*—Manufacturers.
Twilled cloth, fine blue, called duffle; baize, fine red madder; and flat-baize.
Fine thin cloth, deep blue and black; also blue and red, called Spanish stripes, for exportation to India.
Flannel, twilled and flat; superfine, second and third qualities; and fine white flannel, called white dommets.
- 34 ZAALBERG, JAN CORNELIS, & SON, *Leyden*—Manufacturers.
Blankets, for the markets of Holland, Belgium, Java, China, Japan, and France.
- 35 ZUURDEEG, JAN, & SON, *Leyden*—Manufacturers.
Blankets of fine quality, made from Dutch wool, and of a fast colour; not artificially procured by sulphur.
- 36 WYK (VAN) BROTHERS & Co., *Leyden*—Manufacturers.
Woolen coverlets with stripes of different colours.
White woollen knitting-yarn, which is said not to shrink; white knitting-yarn, different sorts; worsted knitting-yarn. Knitted-worsted stockings, in different qualities and sizes.
- 37 HOOGBOOM, JACOBUS JOHANNES, & SON, *Leyden*—Manufacturers.
Blankets made of Dutch wool.
- 38 SCHELTEMA, JACOBUS, & JANSZON, *Leyden*—Manufacturers.
Blankets of different thicknesses, for severe, moderate, and warm weather; made of Dutch wool.
- 39 THEUNISSEN, JACOBUS, *Heppel*—Manufacturer.
Bed-tick, of linen thread, fine quality. Canvas, called "Meppeler everdoek."
- 40 KOOPMANS, K., *Beverwyk*—Manufacturer.
Turkey-red cloth, dyed with Dutch madder.
[In the Class of the United Kingdom to which printed and dyed fabrics belong (Class 18), a note briefly describes this process of dyeing Turkey-red. Madder is the source of the colour; but its brilliance is greatly owing to certain points in the manipulation, and perhaps to certain qualities in the water, which are not often sufficiently attended to. Nor indeed can they ever have been said to be clearly defined.—R. E.]
- 41 ALPHEN (VAN), G., *Breda*—Manufacturer.
Carpets of cow-hair, speckled, red, and black; and green, black, and striped. Staircase carpet.
- 42 HEUKENSFELDT, IAN, *Delft*—Manufacturer.
Carpets:—Velvet, new Brussels, and "under-table," or "crumb-cloths." The under-table carpets are principally used during dinner and supper, to preserve the carpets.
- 43 KROONENBERG, W. F., *Director of the Royal Smyrna or Turkey Carpet Manufactory, Deventer*.
Carpets:—Deventer carpet, woven in one piece. The design is original; the wool produced and manufactured in Holland.
- 44 VEN (VAN DE), PETRUS CORNELIS, *Boxtel*—Manufacturer.
Napkins and table-cloths of fine damask.
Napkins and table-cloths, damask, superfine.
Cloths for communion-tables, fine linen damask.
Napkins with representations of the arms of Holland and Wurtemberg; and Van Heeckeren and Wassender.
- 45 VOORT (VAN DER), H., *Boxtel*—Manufacturer.
Damask table-cloth and napkins, linen, with the arms of Great Britain.
Napkin, linen damask, with the arms of the Netherlands.
Napkin, linen damask, with the arms of Russia.
Table-cloth and napkins, linen damask, and superfine linen.
- 46 GEFFEN (VAN), JOHANNES HERMANUS, *Boxtel*—Manufacturer.
Napkins, table-cloth, and altar-cloth of linen damask.
Napkins and table-cloths of diaper linen. All manufactured of flax spun by hand.
- 47 GALLE, PETER HILBERT, *Kampen*—Manufacturer.
Table-cloth of linen damask, superfine. Napkins of linen damask, superfine.
- 48 TRAVAGLINO, J. A., *Haarlem*—Manufacturer.
Boddice silk; coloured sewing silk; raw and coloured silk.
Gold cloth. Silver damask.
Black figured silk stuff, à la Jacquard. Satin de Chine. Gros de Naples.
Coloured, striped, and checked silk stuffs.

lace. Ribbon. Bourdalour ribbon. Ribbon for decorations. Knot ribbon. Neckcloths, or cr-

ENTHOVEN (VAN), ARNOUT JACOBUS, Empe, near Zutphen—Proprietor.
 spun from the cocoons, white, yellow, and sea-
 Raw white and yellow Dutch silk, and imitation.
 silk (*soie grège*).
 white and yellow silk, and wool silk (*trame*); the
 made from two threads of the silk-worm (*soie de*
deux vers-à-soie).

SWAAB, SAMUEL LEON, The Hague—Inventor.
 partly prepared, without breaking and heckling.
 flax, first quality, for spinning, and entirely pre-
 Hemp, half-prepared, for the manufacture of linen
 residue; and for cotton. "Cotton flax," from the
 of flax. "Cotton," from the residue of hemp.

KAIJER, G. C. F., Amsterdam—Manufacturer.
 pois gloves.

BOOYACKERS & SON, Rotterdam—Makers.
 ir of patent leather or "varnished" boots, the leg
 seam. A Chinese boot. Boot, of which the leg
 are without seam, and weighing about seven and
 unces. Varnished boot, embellished with figures.
 of vulcanized caoutchouc. Boots and shoes.

TIGER, LODEWIJK, Amsterdam—Manufacturer.
 safes.

LAFKBER, ABRAHAM, Gouda—Manufacturer.
 ted cotton reins, made by hand, for a set of four
 in the English national colours; reins for one set
 s; cotton reins, white and black, round and flat.
 ted halters of cotton, with rings, made by hand.

CATZ (VAN), J. B., Gouda—Manufacturer.
 and rope for fishing. Log lines and drum cords
 uth hemp.
 ted reins, for two horses, from English cotton.
 l reins, for one horse, from English cotton.
 ng-net yarn, from Dutch hemp. Cording. Yarn
 e nets, from Dutch flax.

POST & WENDT, Gouda—Manufacturers.
 lebone whips and walking-canes.

OTTO, FRANCO HEINRICH, Amsterdam—Maker.
 roidery, representing an incident of Milton's youth,
 worked in human hair, on white gros-de-Naples,
 me.

OUCKE, CHARLES, Rotterdam—Manufacturer.
 's head-dress. Periwig of grey hair.

LOOYEN (VAN), HENDRIK, Utrecht—Designer.
 imens of dyed silk, coloured with the newly-
 d colouring matter—Polychromate, or chrysammic
 All these colours are derived from the same sub-
 without any other colouring matter, merely by the
 tion of different corrosive processes.
 revious note explains that chrysammic acid is ob-
 from aloes. Its compounds appear capable of
 nicating several different colours of great bril-
 —R. E.]

WIG BREET, C. & F., Zaandijk—Manufacturers.
 les of parchment, and double elephant paper.

60 HONIG, JACOB, & SON, Zaandijk, near Amsterdam
 —Manufacturers.

Specimens of parchment; double elephant, large square
 folio, imperial, crayon paper, &c.
 Striped double elephant: elephant, imperial, super-
 royal, royal, large and small medium, medium post, Vene-
 tian, and various writing papers.

61 GELDER (VAN) & SONS, Wormerveer—
 Manufacturers.

Specimens of double purple and white paper (white
 inside and purple outside) for the use of sugar refiners,
 manufactured by machinery.

62 GIESBERS, T. M., Roermond—Manufacturer.

Iron fire-proof safes, in the form of escutoires, painted
 black, with gilt ornaments, and secure and private locks.

63 MARTIN, E. C., Zeyst, near Utrecht—Manufacturer.

Queen's-ware stove, having in the front an open fire-
 place, and at the same time the air is heated from contact
 with the side and smoke flues.

Patent architectural ornaments, of a particular descrip-
 tion of clay, not readily affected by the influence of
 weather. Capital. Console. Balustrade for a balcony.

Flower-vase suspender, made of clay, glazed on the
 inside. Large and small vases. Flower-pot.
 Consoles and flower-vases intended to be suspended.

65 GRAAMANS, H. C., Rotterdam—Manufacturer.

Patent kitchen stove, and two hearths.

66 HESSELINK, WILLEM FREDERIK, Gorssel, near
Zutphen—Proprietor.

A "seedlip" and a cradle.

67 LANDKROON, JAN, Noordwold, near Dokkum
 —Maker.

Baskets of willow or osier twigs; some painted with
 Frieslandish green (*Vriesch groen*). Exhibited for dura-
 bility and cheapness.

68 DRAAISMA, DOUWE, Deventer—Manufacturer.

Porous pots of earthenware, used in galvanic appara-
 tuses.

[The porous cells alluded to form an important part of
 several forms of the galvanic battery. In that of Daniell
 they are generally used of a circular form. The intention
 of their employment is to permit the passage of the elec-
 tric current uninterrupted through the fluid, from within
 the cell to that surrounding it in which it is placed. In
 Grove's battery the porous cell is somewhat elliptical in
 outline. The form is merely a matter of convenience of
 arrangement.—R. E.]

69 LINDEN (VAN DER), ABRAHAM, Rotterdam—
 Manufacturer.

Cigars made of Dutch and East Indian tobacco.

70 BRANDON, NATHAN DIAS, Amsterdam—
 Manufacturer.

Stearine candles and tapers.

Lime soap.

Stearic acid; the same purified.

[Fatty matter, such as tallow, consists of several prin-
 ciples, among which are found margarine and stearine.
 The two latter are separated imperfectly from other
 principles by saponifying the tallow with lime. The
 "lime soap," thus obtained, is insoluble; and in order
 to obtain the fatty acids which have combined with it,
 it is decomposed by dilute sulphuric acid: a mixture of
 margarine and stearic acids can then be obtained from the
 mass.—R. E.]

71 PERSELAERT, N., & SON, *Maastricht*—
Manufacturers.

Marseilles, Limburg, Japan, odoriferous and other soaps.

72 SONDERMEYER, JOHANNES KAREL, *Rotterdam*—
Designer.

Ground or earth-borer, to promote the vegetation of fruit and other trees. This machine precludes the necessity of digging round the tree. The holes are bored at a distance of two feet from the stem, obliquely, towards the centre of the roots, one foot from each other, and one and a half foot deep, when they must be filled up with manure.

[The object of this implement is to secure a ready access of water to the roots of trees in dry weather, without breaking up the ground. It is capable of boring holes two feet from the stem, directed obliquely towards the centre, and one foot and a half deep; which holes being filled with manure, and pierced at the distance of a foot apart, will enable the cultivator to keep the earth always moist.—J. L.]

73 STAM, FREDERIK, *Bennebroek, near Haarlem*—
Inventor and Manufacturer.

Liquid manure-machine, with arrangements to spread the manure.

74 JENKEN, W., *Utrecht*—Manufacturer.

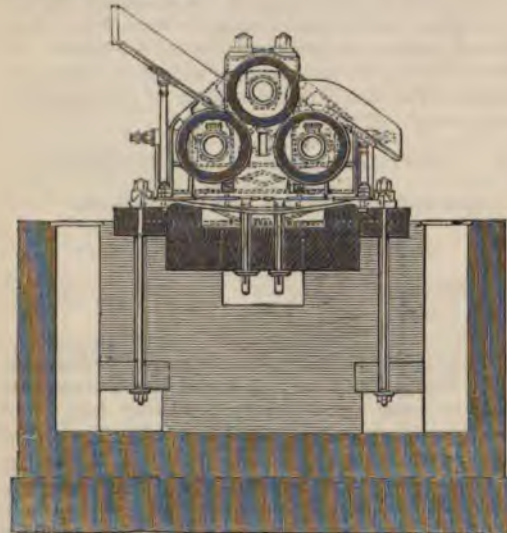
A swing plough of Flemish construction; its share cuts out the furrow entirely, and leaves the bottom flat.

A turnip and carrot cutter of a new construction. This machine cuts one hectolitre, (which is twenty-two imperial gallons, or nearly a sack) in a minute.

75 VAN VLISSINGEN, VAN HEEL, & DEROSNE, CAIL, & Co., *Amsterdam*—Manufacturers.

Sugar-cane mill, of improved construction.

The improvements made in the construction of this sugar-cane mill consist, 1st, in the manner in which the rolls are keyed upon their axes, which prevents them from loosening; 2dly, in the mode of fixing the holding-down bolts, used for tightening the upper roll, which are passed down through the wooden foundation, instead of being keyed into the frame itself. By this means the breaking of frames is greatly prevented, as, in case of anything of extra thickness getting between the rolls, the wood-sleepers of the foundation spring slightly. This sugar-cane mill is represented by a side elevation and plan in the accompanying cut.

76 ENTHOVEN, C. LZ., *The Hague*—Manufacturer
and Inventor.

An iron crane, accurately weighing whilst lifting.

77 GOOSSENS, G., *F.S.A. of the Royal Manufactory of Percussion Caps, Delft*—Inventor.

A machine for the manufacture of percussion caps, extremely simple and double-acting. The moulds of these machines are of copper; nevertheless, five hundred thousand caps have been made with a single mould. The double-acting machine makes a perfectly-finished cap each half-turn; and produces, with the aid of a single adult and a boy, eight thousand caps an hour.

At one operation, these caps are loaded with fulminating-powder, pressed, covered with varnish, and exposed to dry. The maker of this machine is Jean Bar, armourer, at Delft.

78 PETIT & FRITSEN, *Aarlerixtel, near Helmond*—
Bell-founders.

Cast bells for a chime, weighing about 2,500 kilogrammes, or 5,500 lbs., with a suspending apparatus.

79 ENSCHEDE, JOHANNES, & SONS, *Haarlem*—
Letter-founders and Printers.

Printing types:—Great (double pica) Javanese character. Javanese assortment of cast types, consisting of 230 different types, and cast in eleven moulds. Small (Augustin, or great primer) Javanese character: an assortment of cast types, consisting of 175 different types, and cast in eleven moulds; the punches are engraved by the exhibitors from the models procured by Mr. T. Roorda, Professor at the Royal Academy at Delft. The matrices with which all these characters have been cast are rectified and adapted for moulds with fixed registers (*monles à registres fixes*).

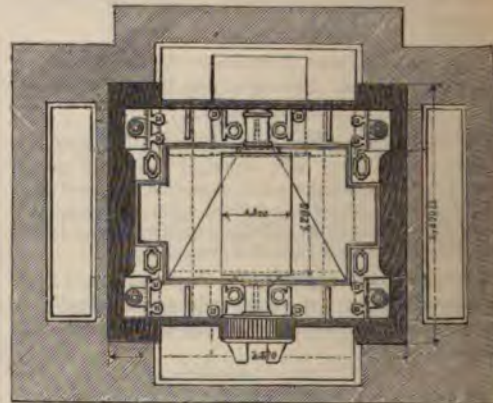
Stereotype plates, for printing quarto Bibles.

80 NERING, BOGEL, & Co., *Deventer*—Manufacturers.

Cast-iron flattening-roll, for calendering wool-revet.

81 SOKDERS, GERRIT, *Moorsien, near Utrecht*—
Inventor and Manufacturer.

A moveable or double-acting safety-axle for carriages, invented by the exhibitor in 1835, and since improved.



Van Vliissingen & Co.'s Sugar cane Mill.

82 BOSCH, C. GERRIT, *Amsterdam*—Inventor and Manufacturer.

A case containing copper less oxidizable than ordinary copper, applicable for shipping and other purposes.

83 BECKER, C., *Arnhem*—Mechanician.

A balance, with weights. Its knife-edge rests on agate planes. This balance will serve to determine weights up to seventy-seven grains nearly, and is said to turn with about the $\frac{3}{2000}$ th part of a grain.

Another balance, the knife-edges resting flat, and the ends on agates; may be loaded with about 1,543 grains (upwards of three ounces troy) in each scale; and is said to turn with about $\frac{3}{2000}$ th part of a grain.

Another balance, resting on three points upon agate planes, with 15,434 grains (upwards of 2 $\frac{3}{4}$ lbs. troy) in each scale, is said to turn with $\frac{3}{2000}$ th of a grain.

A levelling apparatus, simple in use, and its adjustments are easily verified.

[Very sensitive balances are not only very useful in delicate experiments, but are also employed in very many purposes of ordinary life. A high degree of sensibility seems to have been given to the above balances, as they ascertain the true weight to a very small fraction of the whole.—J. G.]

84 KAISER, A., *The Hague*—Manufacturer and Inventor.

Tydbewaarder (time-preserver), for the regulation of clocks, a simplified astronomical clock with some new arrangements. It has been examined by astronomers, by whose reports (published in the *Konst en Letterbode* of 1846, No. 18, and 1847, No. 14) the accuracy of this clock stands comparison with a good chronometer.

85 UHLMAN, KAREL WILHELM, *Zwolle*—Inventor.

An equatorial sun-dial, of copper, with a moveable hour and minute-hand, compass, label, and nocturlabe, which may be pointed to any place; with mechanism by which a cannon may be discharged by means of a burning-glass.

86 HOHWU, ANDREW, *Amsterdam*—Manufacturer.

† An astronomical eight-day clock furnished with mercurial pendulum. A two-day chronometer and other articles.

[All the substances of which a pendulum rod can be made, increase in length with an increase of temperature, and a compensated pendulum is one with a contrivance which will compensate the effect of the expansion of the rod. The mercurial pendulum consists of a steel rod, to which is attached a cylinder of glass or iron filled nearly with mercury, the expansion of which on an increase of temperature is just so much more than that of the rod, that the point of the centre of oscillation of the pendulum is as much varied by the expansion of the mercury upwards, as the expansion of the rod lets it down. The final adjustment of mercurial pendulums is performed by trial and error, or by adding to or taking away mercury, as may be required.—J. G.]

87 LOGEMAN, WILLEM MARTINUS, *Haarlem*—Manufacturer; Mr. ELIAS, Inventor.

A large permanent steel magnet capable of lifting a weight of 500 lbs. Another capable of supporting a weight of 100 lbs.; and a third, capable of lifting a weight of 30 lbs. The constant power of these magnets is said to be more than double that which can be imparted to the same mass of steel by the usual methods. The peculiar process of their construction is an invention of Mr. Elias, of Haarlem.

A common mariner's compass, the compass needle of which is acquired by the process above cited.

Electro-magnetic engine, applicable to the decomposition of water; also for blasting mines at the distance of more than 300 feet, and adapted for the electric

telegraph. The improvement in the construction consists in the inductors rotating, not near, but between the poles of the magnets. In this manner the magnets act more energetically upon the inductors, and a current of greater power is developed by the same amount of magnetical intensity.

[The loadstone, or natural magnet, was for a long time considered as the only body possessing the magnetic properties. It is an ore of iron, of a dark metallic grey colour. There are several different methods of making artificial magnets, or causing hard steel to possess all the qualities of attraction and repulsion, &c., of the natural magnets.—J. G.]

88 EDER, S. T., *Rotterdam*—Manufacturer.

A clock.

89 CAZAUX, J., *Valkenburg, near Leyden*—Inventor and Proprietor.

A dynamometer, to be used as a dynamometer for ploughs, with a chronometric mediator or controller of the indications of the instrument affixed to it. By a slight modification this construction can be used as a dynamometer for measuring other varying strains. The machine consists of two levers fixed to an iron frame, which act on each other by a joint, under varying angles. To one of these levers is attached the plough-team, and on the other the counterpoise, which constitutes one of the factors for the measurement of the power, which changes its position as the strain augments, and is marked by ciphers on the iron section along which the lever moves. The chronometrical mediator of the indications of the machine consists of two watches, provided with second hands, one watch keeping its regular course, whilst the other, by an accelerating apparatus of the balance of the clockwork, runs faster in proportion to the rising of the lever; the velocity of the clockwork is so regulated that for every augmentation of the multiple of the counterpoise by one, the increase of velocity is two seconds per minute. The number of seconds which the watch with the accelerating apparatus runs per minute in the different positions of the lever, is marked in ciphers on the copper section along which the lever moves. In drawing a burden which encounters a variable resistance, such as a towed ship, or a sledge in a rope-yard, owing to changes in the hygrometric conditions of the atmosphere or of the soil, the ordinary spring dynamometers are not sufficient to procure the desired indications. Their sensibility also, in many cases, is not sufficient to show the alterations of straining which follow in quick succession; these alterations being indicated with accuracy by the dynamometer. The instrument was made by a common village blacksmith, according to the directions of the inventor. The axes were applied, and the clockwork executed by B. Van Beek, watchmaker, Leyden. The accelerating apparatus of the clockwork is also his invention.

[A dynamometer is an instrument intended to measure the muscular strength of man and animals, and a pretty good estimate may be formed of such by the use of the above machine.—J. G.]

Mechanical tuning-key for pianofortes, with a support for the joining-piece of the tuning-key; particularly adapted for an upright Brussels pianoforte. The object of this key is to insure greater accuracy when very slight alterations of pitch are required. The support being fixed in its proper place, the key is set on the peg, and the endless screw of the key is turned until the joining-piece comes opposite one of the support chinks; into which the moving part of the joining-piece is lowered. To suit differently formed pianofortes the support must have a different construction. Made by B. Van Beek, watchmaker, Leyden.

[Ordinary tuning-keys are generally formed in one piece of hard iron: in using them care must be taken to

alter the pitch of the spring, only so much as is positively necessary; this, from various causes, is often no easy matter, and the present invention, if it can be turned to general account, will be at once appreciated by tuners.—H. E. D.]

- 90 CONRAD, F. U., *The Hague, Engineer-in-Chief*—Inventor.

Model of a crane-bridge on the Dutch railway. The bridge is constructed over the river Schie, near Schiedam and Deefshaven, where the railway crosses the river at an angle of 87°. The name is literally correct, as the iron girders are nothing more than eight cranes, four on each side, corresponding to the four lines of rails, and so fastened together, that by the application of proper machinery to one side, the whole frame-work falls back in a line parallel with the pier, leaving a sufficient opening to allow a vessel fully rigged to pass between. The same machinery is used to bring the series of cranes together again, when a few bolts or catches suffice to retain them firmly in a position that trains may pass over.

[When railways cross rivers or canals navigable for masted craft, it either becomes necessary to make the bridges at such an elevation as will permit the vessels to pass beneath, or to construct them so that they may be opened. To make high bridges would, in many instances, be impossible without an excessive outlay. Swing, lifting, or rolling bridges are therefore in such cases indispensable.—S. C.]

Model of a rolling-bridge on the Dutch railway. This rolling-bridge is constructed over the old Rhine, a little beyond Leyden, where the railway crosses the river at an angle of 82°. The bridge is of timber, the piers consist of piles, and the abutments are brickwork, on pile foundations. The total length of the bridge is 170 feet; its width, 28 feet 6 inches; the span of the three middle arches 32 feet 10 inches, and the two extreme arches are 20 feet. One of these latter, which is intended for the navigation, is closed by two parallel platforms, which slide diagonally in opposite directions; when opening they are moved simultaneously by one man with very simple machinery. The cost of this bridge was 41,200 florins (about 3,433*l.* 6*s.* 8*d.*). The bridge was executed with the assistance of C. Outshoorn, resident engineer.

Shutting of sluice or dock-gates. This new contrivance is effected on the principle of a common water cock. It consists of a large turn-table placed at the bottom of the sluice, turning on a pivot and resting on a rotary disc. A large cylinder is fixed on this turn-table, having an opening in it of the same dimensions as the opening in the lock. When this tube is turned round a quarter of a circle, which can be done by the means of simple machinery, the sluice is closed, and by the reverse motion opened again. The closing or opening can equally be obtained by the pressure of the water itself.

- 91 CLAASEN, PETER CORNELIUS, *Amsterdam*—Inventor.

Model of a patent railway waggon, with an improved break.

Model of a patent railway, with a third line of rails, to prevent running off the line.

- 92 MAITLAND, ROBERT T., *The Hague*—Inventor.

Model of a self-acting preservative locomotive. A warning apparatus is propelled in front at a distance of about 140 yards, capable of being drawn in on approaching a station.

- 93 VOLLENHOVEN (VAN), C. IOOST, *Rotterdam*—Proprietor.

Models of a cutter, built for fast sailing; a long boat or launch, with a piece of cannonade; gig; yawl, and pinnace.

- 94 WAL (VAN DER), KLAAS SYMENS, *Heeg, near Sneek*—Inventor.
Model of a water-mill with two screws.

- 95 CUIJPERS, JOHANNES FRANCISCAS, *The Hague*—Manufacturer.
Small pianoforte, of purple wood.

- 96 ZEEGERS, FRANS, *Amsterdam*—Manufacturer.
A large folding screen, composed of eight partitions or doors, adorned with figures in relief, in Chinese or Japanese style, varnished and mounted, with engraved copper joints.
An elegant wooden fire-screen and round table, varnished in red lacquer, and painted in the same manner.

- 97 HOBRIX BROTHERS, MATTHIEU & WILLEM, *The Hague*—Manufacturers.
Ladder and staircase for libraries. From the manufactory called Anna Paulowna, established in 1800.

- 98 SCHUTZ, LUDWIG WILHELM, *Zeijst, near Utrecht*—Designer and Manufacturer.
Specimens of zinc casting. Stag, embossed by Mr. Bauch, at Berlin; flower case; flower table; case for lamps; cases with flower-pots, &c.
Flower tables; flower case; and flower vases and baskets, in wood and twisted reed.

- 99 REGOUT, P., *Maestricht*—Manufacturer.
Two large chandeliers in cut crystal, supported by gilt metal, made for 16 gas lights. Two smaller chandeliers in cut crystal, supported by gilt metal, made for 58 gas lights of common size. A large vase of crystal. These crystal chandeliers and vase are represented in the accompanying Plate 46.

Glasses, assorted. Glass conduit pipes for gas and water, as employed at Maestricht.

- 100 LURASCO BROTHERS, *Amsterdam*—Manufacturers.
Bronze statues, representing M. A. de Ruyter, Prince William I., and Rembrandt van Ryn; all modelled by L. Royer.

- 101 KEMPEN (VAN), JOHANNES MATTHEUS, *Utrecht*—Gold and Silver Work Manufacturer.
Nineteen articles in silver. This collection—a specimen of reproduction of the principal architectural styles, in their application to gold and silver works—is divided into five branches, representing the Grecian, Gothic, and Elizabethan styles, those of Louis XIV. and of Louis XV. With a pamphlet entitled, "On the Forms of Gold and Silver Works," relative to these articles.

- 102 GREBE, JEAN G., *Rotterdam*—Silversmith.
A specimen of embossing, in the form of a beaker, which is made from a single piece of silver.

- 102A HEYNSBERGEN (VAN), WILLIAM JACOB, *The Hague*—Manufacturer.
Show case of rosewood, containing military lacings as epaulettes, sword and shoulder knots, cords, scarfs, &c., the fashion of the Dutch army. Galloon, and gold and silver thread, for use in the Indies.

- 103 LUCARDIE, J. M., *Rotterdam*—Manufacturer.
Silver ornamented tea kettle, with embossed figures.

- 104 ROMAIN, DESIRE, *Rotterdam*—Manufacturer.
Corsage or pointe, made of diamonds and pearls, which may be divided in three parts.

- 105 VERSENEL, JACOBUS SEBASTIANUS, *Rotterdam*—Maker.
Flowers and butterflies, sculptured in Carrara marble, in different colours.





STUY, JAN MICHAEL, *Roermond*—Maker.
Among which is a figure of Her Majesty the
gland. Prints, from medals and stamps.

STREE, LOUIS JOSEPH, jun., *The Hague*
—Designer and Maker.

l with artificial flowers in human hair, repre-
sents horn of plenty."

LESS, T. A., *Amsterdam*—Maker.

eye, intended to prove that objects are trans-
y, and not inverted on the retina.

rence to the apparatus here described, it is
state that a simple experiment upon the
f man or animals reveals the fact, that
ceived invertedly upon the retina or sensitive
the eye. It is not difficult so to prepare the
nal as to afford the observer an opportunity
ctly in what condition, as to erectness or
images of objects are depicted on the retina.
memorial, the question has always been
philosophers, how it can be that objects are
n their images are received in an inverted
ie retina? The correction is not a mecha-
ental process, such at least is the generally
on; but as to its necessity few are at present
estion.—R. E.]

109 ENSCHEDE, JOHANNES, & SONS, *Haarlem*
—Letter-founders and Printers.

Bibles in quarto and folio, for the use of the Dutch Re-
formed Church, printed for the Dutch Bible Company
(*Nederlandsch Bybel-genootschap*), with stereotype plates.

110 NOORDENDORP, P. H., *The Hague*—Printer.

Specimens of Dutch printing, consisting of the following
work:—"Journal de l'Ambassade extraordinaire de Son
Excellence Mylord Comte de Portland en France, par
rapport du cérémonial; with illustrations printed in the
text by Ch. Rochusson." Of this work, only 25 copies
were printed.

111 ZWEEBAARDT, A., *Amsterdam* Printer & Binder.

Two books, in quarto, viz., "Graduale Romanum" and
"Anti-phonarium Romanum."

112 REGER, H. J., *Rotterdam* Bookbinder.

Works of Hogarth, in an elegant binding.

113 FOON, DR. H., *Amsterdam* Inventor.

Specimens of transparent writing.

114 SAURBIER, J. C., *Rotterdam* Manufacturer.

A bracelet of diamonds, with a moveable rose and
amethyst.





NORTH AND SOUTH AREAS, C. 71 to 74; D. E. 55 to 58; F. 55, 56; G. H. I. 55 to 57; J. 55, 56; K. 55 to 58;
 L. 55 to 57; M. N. 56, 57; O. P. 55 to 57; Q. R. 55; S. 55, 56.
 NORTH EAST CENTRAL GALLERY, G. H. 49; I. 49 to 57.

THE exhibited productions of Belgium furnish a very complete view, not only of the state of manufacturing industry and the industrial arts, but also of the materials operated upon. The latter, which include the first four Classes of the Exhibition, are contributed by not fewer than 115 exhibitors. They include mineral fuel of various kinds; metals and metalliferous ores, as zinc, lead, and iron; specimens of whet stones; and a variety of chemical preparations. The agriculture of this country is represented by contributions of hops, wheat, barley, &c., from East and West Flanders. Among the articles recognised as belonging to the Third Class are some specimens of Belgian tobacco in leaf, called "Wervicq." The chemical preparations alluded to include colours, glue, oils, dyes, &c. Flax in its different states of preparation for use is also exhibited. Raw silk of native growth has been sent, and is represented in different qualities. Among the machinery are many interesting and important contributions, constituting the largest, in point of size, forwarded by any foreign State. After examination of the magnificent engines exhibited on the British side, it is interesting to compare them with the same powerful machines here shown. Among these is a marine engine, of 140-horse power, and several locomotives, with railroad apparatus. The extraordinary results recently obtained by applying centrifugal force to the purification of sugar receive a valuable practical illustration in a patent engine exhibited, which produces this effect upon sugar in the loaf. The sugar is rendered perfectly white, and free from impurity, by this apparatus. Machines employed in textile manufactures, carriages, and agricultural implements, form likewise an interesting feature in this collection. The display of fire-arms is large, and includes, among others, the "needle" gun, presumed to have great precision in use. The musical instruments, philosophical apparatus, &c., also should receive notice. A large number of exhibitors appear as representatives of textile productions in Belgium; the linen manufacture naturally assuming the chief prominence. From Brussels, as might be expected, a beautiful collection of the finest and most costly lace has been sent. The lace manufactures of other towns are also represented. Some of the beautiful Savonnerie carpets are also exhibited. In glass, china, and mineral manufactures, the specimens exhibited indicate the present state of those arts in Belgium. In furniture, the articles exhibited are principally of a small size. A large number of miscellaneous objects give variety and extent to this collection. The sculptures, many of which are placed in the main avenue, will be regarded with much interest. Upwards of 500 exhibitors appear, on the whole, as the representatives of Belgium at the Exhibition.—R. E.

- 1 GUILLAUME, JEAN ANTONIO, *Bovigny, Luxembourg.*
 (Agent, Mme. Hulme, 3 Duke Street, Bloomsbury Square.)
 Samples of hones.
- 2 OTTE, CHARLES JOSEPH, *Vielsalm, Luxembourg.*
 (Agent, M. Cuylits, 55 Gracechurch Street.)
 Samples of hones, rough and prepared.
- 3 LAMBERTY, CHRISTOPHE, *Vielsalm, Luxembourg.*
 (Agent, M. Cuylits, 55 Gracechurch Street.)
 Samples of hones.
- 4 OFFERGELD, PIERRE JOSEPH, *Vielsalm, Luxembourg.*
 (Agent, M. Cuylits, 55 Gracechurch Street.)
 Specimens of whet-stones.
 [The hones of Belgium are good and well known. A

considerable variety is obtained from the slaty rocks of the Luxembourg, available for many purposes. Most of the whet-stones of commerce are silicates of alumina, obtained from metamorphic rocks. They are of great hardness, of light green colour, slaty fracture, and generally associated with clay slates.—D. T. A.]

- 5 COLETTE-DOUCET, F. J., *Bertrix, Luxembourg.*
 Specimens of slate-pencils, whet-stones, and roof-slatting.
- 6 SOCIÉTÉ DES HAUTS FOURNEAUX DE POMMERÈUL, *Hainault.*
 Specimens of pig iron, Nos. 1, 2, 3, 4.
 Specimens of bar iron, grey, mottled, and white.

- 7 SOCIÉTÉ DE LA NOUVELLE-MONTAGNE, *Verviers*.
Specimens of grey oxide of zinc, and zinc tiles for roofing.
Specimens of roofing with zinc tiles. Sheet-zinc, for dressing paper. Condensed sheet-zinc, adapted for engraving.
Sheet-zinc, for ship-sheathing. Pig-lead.
- 8 DE ST. HUBERT, ED. *Bougnies, Namur*. (Agent, M. J. Whestorp, 9 George Yard, Lombard Street.)
Upper and nether mill-stones. Pieces of stone, as samples of the same.
- 9 MORIMONT, JEAN BAPTISTE, *Wierde, Namur*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Pair of mill-stones, for grinding corn.
[Belgium is rich in mill-stones of fair quality, obtained generally from the grits of the older geological period, associated with coal and with the limestone of similar or rather older date. They are not, however, equal in quality to the French *basin-stones*.—D. T. A.]
- 10 FALLON-PIRON, JEAN BAPTISTE, *Namur*.
Block of black marble.
[The black marble of Belgium exists in vast quantities, and is well adapted for various ornamental purposes. It may be obtained of large size and of very low price. The quality of the marble may be seen in various specimens exhibited both in a rough and partly polished state, and finished articles of furniture.—D. T. A.]
- 11^o ELOIN, FELIX, *Namur*—Mining Engineer.
Specimens of safety-lamps, large and small patterns.
Apparatus for introducing air into the lamp, and distributing it around the flame.
Key for shutting the lamps, and specimens of wicks.
- 12 TOMBELLE-LOMBA, E., *Bonneville, Namur*.
Belgian kaolin, or China clay, for the manufacture of fine porcelain, for dressing paper, and for the manufacture of blue.
Black earth, of first quality, for the manufacture of crucibles, fire-proof bricks, &c.
The same, of second quality, for the manufacture of pottery, or delft ware.
- 13 PETIT, FERDINAND, & Co., *Auvelais, Namur*.
Specimens of coals for manufactures, steam-engines, and domestic use.
[The Namur coal is obtained from the eastern or Liege division of the Belgian coal district; the area of supply, including nearly 6,000 acres in the province of Namur, and upwards of 100,000 in that of Liege. Most of the coal is used in the neighbourhood in the various manufactures for which Namur is celebrated. The quality is moderately good.—D. T. A.]
- 14 DE GAIFFIER D'HESTROY, Baron, *Mallien, Namur*.
Samples of China clay.
- 15 DE FERRARE, F. & L., *Wierde, Namur*.
Plastic earth, for gas-pipes, crucibles, glass-house pots, and fire-proof bricks.
- 16 DESMANET DE BIESME, Viscount, *Golzinne, Namur*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Black polished marble pilaster.
Four slabs of black polished marble.
- 17 LA SOCIÉTÉ DE VEDRIN, *Namur*.
Specimens of pyrites (bisulphuret of iron).
Specimens of galena (sulphuret of lead).
Specimens of lead from the metallic ore of the Vedrin mine.
- 18 PERARD & MINEUR, *Courin, Rouillon, and Liege*—Iron-masters. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of iron ore; pig-iron; bar-iron, first casting; strong charcoal bar-iron, for gun-barrels and hardware; puddled bar-iron, for fire-arms.
Specimens of square iron, set cold and hammered; horse-shoes, forged cold; piece of a horse-shoe, bent cold; malleable cast-iron; charcoal iron, for gun-barrels, fully tested; charcoal puddled cast-iron.
[Most of the iron of Belgium is of excellent quality, and although much more costly than that of England, comes next to our own in real importance. The specimens sent for exhibition are worthy of examination as good examples of the qualities thought necessary on the Continent for the construction of gun-barrels.—D. T. A.]
- 19 DETHIER, ARISTIDE, *Theux, Liege*.
Specimen of black marble, unpolished; slab of the same marble, partly polished; vases of the same marble, polished.
Specimen of ferruginous zinc ore; specimen of rough zinc from the ore.
- 20 BEHR, F. L., *Seraing, Liege*—Director of the Société de l'Espérance.
Specimens of bar iron, for the manufacture of steel; and of pig iron No. 1; both produced from coke in the cold air.
- 21 BRIKHE, EMILE, for the SOCIÉTÉ DE CORPHALIE, *Antheit, Liege*.
Galena; zinc ore; blende, with galena; galena, with carbonate of lead; pig lead; sheet-zinc; specimens of zinc nails, for roofing and ship-sheathing; grey oxide of zinc, for paint.
- 22 COMPAGNIE DES MINES ET FONDERIES DU BLEYBERG, *Montzen, Liege*.
Specimens of galena, blende, galena and blende mixed, in rough ore; galena and blende, in various states of preparation, from the ore to the powder; pig-lead, made from the galena of Bleyberg.
- 23 DE HANSEZ, *Theux, Liege*.
Specimens of iron ore.
- 24 MUESELER, MATHIEU-LOUIS, *Liege*—Mining Engineer.
Safety-lamp, invented by the exhibitor, and used in the mines of Belgium.
Improved safety-lamp, of the same kind. The improvement consists in the division of the smoke-consuming chimney into several compartments, by means of partitions.
[The Mueseler safety lamp has for some time been extensively employed in the Belgian coal mines, and has been described by the Government Inspectors of Mines in that country as the most effectual modification of the Davy lamp. The flame is enclosed within a thick glass, covered by a metallic gauge. The air required for combustion enters through the gauge and descends the glass, while the products of combustion ascend through a sheet iron tube surmounting the flame. The upper part of the lamp is defended in the ordinary way and a cage forms a further safeguard. The chief advantage arises from the glass and cage, the former of which is liable to be broken either by water or an explosion within the The

principal advantage is the greatly increased weight. When clean and whole it gives more light, and is safer than the Davy. In case of use in dangerous places, and when dirty it is probably inferior.—D. T. A.]

- 25 LAMBERTY BROTHERS, *Stavelot, Liège*. (Agent, M. Cuyllits, 55 Gracechurch Street.)

Seventy specimens of hones, of different sizes and qualities.

Two specimens of whet-stones, for scythes.

- 26 SOCIÉTÉ DES MINES ET FONDERIES DE ZINC DE LA VIELLE MONTAGNE, *Liège*. (Agent, H. F. Schindl, 12 Manchester Buildings, Westminster.)

Raw ore, in the piece, and washed. Ore, calcined and ground. Ore and charcoal, mixed for the furnaces.

Raw zinc. Sheet zinc of all kinds, for roofing, ship's sheathing, paper-dressing, household utensils, tin-smith's work, &c. Bars, for ship nails. Drawn zinc, for nails of all kinds. Brass.

An assortment of chemical compounds, made of zinc. Grey oxide, for paint. Cement, for boilers.

[The Vielle Montagne Mining Company has long been known as working large quantities of the common zinc ore of Belgium (calamine), and introducing the metal into this country at rates which render the working of blende (or sulphuret of zinc) of England not profitable. The zinc is used for many purposes, as well directly to replace lead and tiles in roofing and covering buildings, &c., as indirectly to supersede partly the white lead of commerce by the oxide of zinc prepared for this in a particular way. Zinc has very much more tenacity than lead, and is very much lighter for roof work than slate, tiles, or lead. The zinc made by the Vielle Montagne Company is extremely pure, containing only a little iron and some traces of lead and sulphur.—D. T. A.]

- 27 SOCIÉTÉ DES HAUTS FOURNEAUX, *Chatelineau, Hainault*.

Specimen of lump coal, for the use of common forges and steam-engines. Specimen of coal, principally adapted for steam-engines.

- 28 COMPAGNIE DU CHARBONNAGE DE PONT-DE-LOUP-SUD, *Pont-de-Loup, Hainault*.

Bituminous coal, for domestic use, steam-engines, &c. Dry bituminous coal, for burning bricks and limestone.

- 29 COMPAGNIE DU CHARBONNAGE DE BOUBIER (L. J. MAULAZ & Co.), *Châtelet, Hainault*.

Cannel coal, for steam-engines, domestic use, &c. The small coal is adapted for the manufacture of swords and fire-arms, hardware, and chemical products. Bituminous coal, for steam-engines, domestic purposes, laundries, breweries, &c.

- 30 DELCOURT, ANTOINE, for the SOCIÉTÉ CHARBONNIÈRE DU POIRIER, *Montigny-sur-Sambre, Hainault*.

Specimen of bituminous pit-coal, for the manufacture of coke.

- 31 QUINET, SYLVAIN, *Gilly, near Charleroi*—Director of the Coal Mines of Trienkaisin, Deux-Forêts, and Combles.

Bituminous coal, of superior quality, adapted for the forging of metals, and the manufacture of coke for metallurgical operations. Semi-bituminous coal, of good quality. Semi-bituminous coal, of superior quality, adapted for puddling cast-iron, rolling-mills, iron-works, wire-works, &c. Similar coal, adapted for flattening-mills, distilleries, sugar-refiners, glass-makers, &c.

- 32 WAUTELET, J., for the CHARBONNAGE D'OIGNIES-AISEAU, *Charleroi*.

Specimens of semi-bituminous coal, adapted for drying-houses and domestic fuel.

[The Hainault coal occupies a surface of upwards of 200,000 English acres, and includes, as will be seen, both bituminous and anthracite kinds. There are, in all, 114 different seams in the district, the greatest expansion of which, near Charleroi, is of great industrial interest. There are three distinct kinds of coal, viz., 1st, the upper or Henu coal, which burns easily and rapidly, with much flame and smoke, and is adapted for steam-boilers; 2nd, the middle or bituminous coal, well adapted for coking and for the forge, and also for domestic purposes; and 3rd, the lower or anthracitic coal—friable, contains little bitumen, but burns with much heat and very slowly. The workings for coal in the Mons district are carried on at considerable depth, the upper beds being 1,000 feet deep.—D. T. A.]

- 33 DE RASSE, ALBERT, for the SOCIÉTÉ DES MINES DE ROUVEROY, *Mons*.

Specimens of copper ore and metal.

- 34 SOCIÉTÉ PIRE-ET-VIOLETTE, *Chartreuse-lez-Liège*.

Samples of coals.

- 35 WOUVERMANS, JOSSE, sen., *Molenbeek-St.-Jean, Brabant*.

Several specimens of varnish, and of its polishing effects. Specimens of azure-blue and mineral-blue.

- 36 VLOEBERGHES, —, *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)

Specimens of lacquers and dyes.

- 37 CAPPELLEMANS, J. B., sen., DEBY, & Co., *Brussels*.

Collection of chemical products. Collection of sheets of glass for windows, of all sizes. Collection of bottles of every description, large and small.

- 38 SOCIÉTÉ DE FLOREFFE, *Floreffe, Namur*.

Specimens of anhydrous sulphate of soda; anhydrous carbonate of soda; salt of soda, a combination of the preceding; impure caustic soda, and crystals of carbonate of soda.

[The rock salt of commerce, and granular salt, which consist chemically of chloride of sodium, are the prime sources of this valuable chemical product. Formerly, both soda and potash were obtained by burning sea-weed. Soda of commerce is now prepared from salt, by mixing the latter with sulphuric acid, so as to form a sulphate of soda, in a reverberating furnace. The sulphate of soda, or saltcake, is decomposed by chalk and ground coal, which are mixed with it, and is then exposed to a high temperature. The mass is afterwards washed, and the solution purified and crystallized. Carbonate of soda is formed by heating the impure alkali with sawdust, or other carbonaceous matters, washing the residue, and crystallizing. By an ingenious combination of processes, muriatic acid, and bleaching powder, commonly called chloride of lime, are made also in alkali works. Some of these establishments are among the most extensive of any concerned in the industrial arts. The crystallizing houses, in connection with manufactories of this description in Great Britain, present a wonderful and interesting spectacle in the long rows of pans and masses and crystallized alkali which are arranged in order throughout their extent.—R. E.]

- 39 **DEBBAUDT BROTHERS, Courtrai.**
Specimens of ceruse, or white lead. Cakes of the same.
- 40 **SOCIÉTÉ DES CHARBONNAGES ET HAUTS FOURNEAUX D'OUGRÉE, Ougrée, Liege.**
Specimens of metallic colours for painting on wood and metals, consisting of a mixture of zinc and lead, or of their oxides.
- 41 **COLDERS, VAN ROY, Antwerp.**
Stucco, or plaster, a preservative from damp. Tiles, called "Saragousty," of a composition intended to prevent the action of damp from old walls, stables, &c. Paper, manufactured for the same purpose.
- 42 **BRASSEUR, EUGENE, Ghent. (Agent, M. Cuyllits, 55 Gracechurch Street.)**
Specimens of ceruse, or white lead.
- 43 **HEERINCKX, FRANÇOIS, Uccle, Brabant.**
Specimens of rye.
- 44 **VANDEN BORRE, JEAN, Uccle, Brabant.**
Specimens of winter wheat.
- 45 **VANDER ELST, FRANÇOIS, Uccle, Brabant.**
Specimens of corn.
- 46 **VERHEYDEN, EGIDE, Dilbeq, Brabant.**
Specimens of red winter wheat and winter rye.
- 47 **LEGRAS, ADOLPHE, Nederoverheembeek, Brabant.**
Specimens of winter wheat, rye, and barley.
- 48 **D'HUARD, BARON, Villermont, Luxembourg.**
Specimens of oats, horse-beans, and buck-wheat.
- 49 **VAN OPHEM, Uccle, Brabant.**
Specimens of buck-wheat and winter barley.
- 50 **PREMANS, HENRI (Widow), Corbeek-Loo, Brabant.**
Specimens of white winter wheat.
- 51 **D'HOLLANDER, JACQUES, Moerzeke, East Flanders.**
Specimen of red wheat (crop 1850).
- 52 **VANDEN ABEELE, LEONARD, Appels, East Flanders.**
Specimens of grass (crop 1850).
- 53 **PERDICUS, J., Herent, Brabant.**
Specimens of red winter wheat.
- 54 **MINTEN, ANTOINE, Louvain.**
Specimens of red winter wheat.
- 55 **MERTENS, BARON, Ostin, Namur.**
Specimens of wheat, barley, rye, oats, and vetches.
- 56 **COOSEMANS, MICHEL, Kesseloo, Brabant.**
Specimens of red winter wheat.
- 57 **DE MULDER, —, Poesele, East Flanders.**
Specimens of wheat.
- 58 **DE MATHELIN, —, Messancy, Luxembourg.**
Specimens of wheat, rye, and barley.
- 59 **VYVENS, EDWARD, Huyse, East Flanders.**
Specimens of red wheat.
- 60 **STOBBELAERS, —, Moerzeke, East Flanders.**
Specimens of white wheat, red wheat, and rye; all of crop 1850.
- 61 **COLLE, —, Lootenhulle, East Flanders.**
Specimens of wheat.
- 62 **DE HEUNHEUSE, —, Aye, Luxembourg.**
Specimen of spelt, a species of wheat.
- 63 **DEGRYSE, LOUIS, Poperinghe, West Flanders.**
Specimens of hops, and of blue and white peas.
- 64 **DEQUIDT, L. (Widow), Poperinghe, West Flanders.**
Specimens of hops.
- 65 **VAN MERIES, Madame, Poperinghe, West Flanders.**
Specimens of hops.
- 66 **DELBAERE, Madame, Poperinghe, West Flanders.**
Specimens of white winter wheat.
- 67 **FONTAINE, GUSTAVE, Brussels.**
Specimen of solidified milk, designed for the use of the navy.
- 68 **DOCQUIR, P. J., & PARYS, St.-Josse-ten-Noode, Brabant.**
Specimens of potato-flour, bolted and unbolted.
Specimens of animal-black, in coarse and fine grain, and in powder.
- 69 **CLAVAREAU BROTHERS, Dinant.**
Specimens of vegetable produce.
- 70 **BILLIARD, HENRI, Menin.**
Specimens of tobacco in raw leaf, used chiefly for fermentation. It is employed instead of snuff.
- 71 **PLAIDEAU, —, Menin.**
Specimens of snuff, of various qualities, including St. Vincent, Virginia, civet, Paris, Lille, Dutch, Tonka, Dunkirk, impalpable, &c.
Specimens of tobacco, of different kinds, including Porto-Rico, Menin, Polish, Maryland, Werrick, English, &c.
Specimens of roll tobacco, of different kinds.
- 72 **BROVELLIO, J. B., & Co., Menin.**
Specimens of snuff, including Macouba, Paris, civet, Robillard, St. Vincent, impalpable, &c.
Specimens of tobacco, including Menin, Werrick, Varinas, Maryland, &c.
Tobacco in rolls, and sanitary snuff.
- 73 **BOCKEN, HUBERT, & Co.**
Specimens of blue and white starch.
- 74 **VAN BUNNEN, CL., Madame, Bruges.**
Specimens of potato-flour, bolted and unbolted.
- 75 **PEERS, ERNEST, The Chevalier, Oostcamp, West Flanders.**
Specimens of forty-eight species of wheat, including those of Mont d'Or, Bengal, Erret, Oxford, Rham, Heidelberg, Bessarabia, Pomerania, Taganrock, Marianopolis, Scotland, St. Helena, Holstein, Hautes-Alpes, Odessa, Dantzic, &c.
Specimens of rye, common and Roman; of summer barley; and of buck-wheat, common and Campine.
- 76 **BEHRYT, —, Rumbeke, West Flanders.**
Specimens of barley, rye, harico-beans, red and white wheat, winter oats, and buck-wheat.
- 77 **WILLEMS, —, Hasselt.**
Specimens of wheat, rye, spelt, barley, oats, and buck-wheat; crops of 1850.
- 78 **BLYCKAERTS, GUSTAVE, Tirlemont.**
Specimen of potato-flour.

- 79 **VERSCHEVE, LOUIS, Ypres.**
Specimen of native tobacco.
- 80 **LABOUCHE, ALBERT, Wervicq.**
Specimen of native tobacco.
- 81 **CLAU & CARON, Ghent. (London Agents, Van Notten & Co.)**
Specimens of candied sugar, of various qualities and colours; and of manufactured sugars, including crushed and lump, and for exportation.
Patent lump sugar, crystallized, and manufactured by new processes.
- 82 **VERCAUTEREN, JEAN-LEON, Zele, East Flanders.**
Specimens of native linseed.
- 83 **ROELS & Co., Lokeren.**
Specimens of prepared flax, from Lokeren, Muffin, and St. Nicholas.
- 84 **VANDESTRATEL, FELIX, Brussels.**
Specimen of oil of colza, in its natural state. The same, purified for lamps. Purified linseed oil, for paint.
- 85 **CLAUDE, LOUIS, Brussels.**
Oil of colza, purified for the use of the lamps called Carol, Moderator, &c.
- 86 **DE MEYNS, CHARLES, Forest, Brabant.**
Specimens of raw silk, of floss and spun silk, and of the cocoons from which the silk was drawn.
- 87 **BINE, LOUIS-EMILE, Anderlecht, Brabant.**
Specimens of very pure oleine, from hents' and sheep's feet, adapted for fine watch-work.
Pure animal oleine, from horse-fat, adapted for large clock-work, for fire-arms, and the manufacture and lubrication of machinery.
The same, purified by a new chemical process.
Pure vegetable oleine, from vegetable oil chemically purified, adapted for lubricating locomotives and other railway machines.
Pure vegetable oleine, exhibited as a specimen of purification by the new process.
- 88 **LECLEROQ, FRANÇOIS, Longuecamp, Namur.**
Specimens of flax, steeped, peeled, and refined.
- 89 **JORANT-ATHREY, Dinant.**
Specimens of glue.
- 90 **DROUAT-DELPORTE, Ghelure, West Flanders.**
Specimens of peeled flax, whitened, and of green flax.
- 91 **VERDUYSSE, HENRI & DAMISQUE, Courtrai.**
Specimens of oil of colza, common extract; of the same purified for lamps; and of the same for candle lamps.
- 92 **BRYN, HYBERT, Bep.**
Specimens of glue.
- 93 **HANNUTS-DELOYE H. G., Bep.**
Specimens of glue.
- 94 **BARTIER, PIERRE, Athée-la-Vie, West Flanders.**
Specimens of mineral machine: natural shells reduced to powder; the same calcined to a dark red; the same impregnated with sea-water, and reduced to fine powder. Lime from shells: the same shocked with sea-water.
- 95 **LAVINLETTE, DE MOUR, Bruges.**
Peeled flax, steeped green, from the district of Bruges, crop 1850. English mark IV.
- 97 **STURBE & BACRY, Bruges. (Agent, M. Cuyllis, 55 Gracechurch Street.)**
Specimens of oak bark, called "Poperinghe twigs."
Specimens of oak bark from young trees in the environs of Bruges, called "Young tree bark."
- 98 **DAVID & DE BOE, Antwerp.**
Specimens of peeled flax.
- 99 **BRIERS, JOS. sen. Antwerp.**
Specimens of glue, manufactured by steam.
- 100 **REUSINS, PIERRE-FRANÇOIS, Antwerp.**
Specimens of copal varnish, for carriages and horse decoration.
- 101 **VANDESCHEIJK BROTHERS, Antwerp.**
Specimens of artificial wool.
- 102 **VERHEIJT, FRANÇOIS, Greenberges, East Flanders.**
Samples of raw hemp, crop 1850; and of peeled hemp from the same.
- 103 **VAN-RIET, PIERRE JEAN, Moerzeke, East Flanders.**
Samples of raw hemp, crop 1850.
- 104 **DESMET & Co. Zele, East Flanders.**
Samples of peeled flax; and of flax dried with linseed, crop 1850.
- 105 **GILTA, JEAN LAMBERT, Appels, East Flanders.**
Samples of raw hemp, grown in 1850.
- 106 **VAN HOET, SIMON PIERRE, Hamme, East Flanders.**
Specimens of peeled flax.
- 107 **VANBOGAERT, JOSEPH BENOIT, Greenberges, East Flanders.**
Specimens of peeled flax and hemp, crop 1850.
- 108 **VERSTRATEL, EMILE, Ghent. (Agent, M. Cuyllis, 55 Gracechurch Street.)**
Specimens of animal black.
- 109 **SOMKINS, EDWARD, the Chevalier, Seysaerde, East Flanders.**
Pieces of raw wool, produced from sheep raised at the Agricultural Exhibition of 1841, at Swynaerde-lez-Gand. Yarn from the same wool combed. Specimens of the same wool spun by hand.
- 110 **SPEERS, BERNARD, Ghent. (Agent, M. Cuyllis, 55 Gracechurch Street.)**
Specimens of animal black.
- 111 **DEPOTIER, AMAND, Andenaerde.**
Skins of raw silk; cocoons; specimens of colza, covered with cocoons.
- 112 **DE GUNING, AUGUSTE, Ghent.**
Specimens of white and yellow cocoons of the Chinese race, produced in the silk factory at St. Denis Westrem-lez-Gand. Specimens of the skins of these cocoons, and of the thread and ribbons of the same.
- 113 **VERHEIJT, PHILIPPE-JACQUES, Greenberges, East Flanders.**
Specimens of dried flax with linseed; and of very fine peeled flax, crop 1850.
- 114 **VAN WIELK, JEAN-BAPTISTE, Greenberges, East Flanders.**
Specimens of flax steeped in stagnant water, crop 1850; of the same peeled; and of yarn of the same.

D'HAESSE, BESOFF, Zele, East Flanders.
 Specimens of flax steeped in stagnant water, crop 0; and of the same dried with linseed.

6 **DEMAN, PIERRE, St.-Jean-les-Needs, Brabant.**
 Specimen of carriage, called a "Cab-piston."

7 **MOUTHUY, ALBERT, Brussels.**
 Specimens of engine-straps.

18 **JONES BROTHERS, Brussels.**
 Specimens of carriages—a double chain; and piston, 4th steel before and behind; brack for pomes; buggy, manufactured for Bombay, Calcutta, and Batavia.

19 **COCKERILL, JOHN, Seraing, Liege.**
 Specimens of grey pig-iron, grey bar-iron, and white iron.
 Specimens of puddled iron prepared for various purposes, hammered, hardened, and made into steel. Piece of axle-tree for waggons. Bar of iron for the tires of heavy carriage wheels, &c.
 An expansive and condensing steam-engine of 10-horse power, adapted for vessels having intermediate paddle-wheels for the navigation of a river with strong and shallow currents.
 A locomotive engine, with jointed carriage, for heavy use to run on railway curves of small radius. Diameter of cylinder 16 ins., stroke of piston 24 ins.
 A high-pressure steam-engine of 14-horse power with vertical cylinder, adapted for manufacturing purposes.
 A small high-pressure engine, 4-horse power, with water boiler, for watering gardens and conservatories. Diameter of cylinder 4½ ins., stroke of piston 12 ins.
 Model, one-fourth of the real size, of a machine for lifting, without danger to workers, the stones and soil of miners. Diameter of cylinder 14 ins., stroke 10 ins. and descent 12½ feet.

1) **SOCIÉTÉ DES HAUTS FOURNEAUX UNIS DE CHARBONNAGES DE MARIGNELLE ET COURCELLES, Courcelles, Hainaut.**
 Railway locomotive engine and tender. Diameter of cylinders 16 ins., stroke of piston 24 ins. Diameter of six coupled wheels each 4 feet 6 ins.
 Ventilator for mines, with double chamber, &c., mounted on the system of Fabry.
 Pair of cylinders for locomotive engines, in the best state as they came from the foundry.
 Specimens of semi-continuous cast steel for domestic uses, engine-boilers, forges, &c.
 Specimens of rails, used for locomotive wheels, bars of sheet-iron, iron sleepers for railways, round and flattened cylinders, and rails of various countries.

VAN AKEY, CORVILLE-BENON, Amberg.
 four-wheeled carriage.

VAN AKEY, P. & SON, Amberg.
 carriage, called "Carréon d'acier."

JOUVE, LOUIS, Mouscron-St-Jean, Brabant.
 tent double fire and sides, under
 tent circular frame, for knitting articles in wool, flax, and silk.
 tent forcing and suction pump.

VAN GOMTEKE, VICTOR, Louvain, Brabant.
 (Agent, M. Cuyllis, 55 Grassmarket Street.)
 tent centrifugal apparatus, for purifying and whitening sugar
 tent centrifugal apparatus with two alternate drums, purifying raw sugar, &c. Similar machine with one drum.

125 **HOUTY, AUGUSTE, Brussels.**
 Models of machines for cleansing and purifying rice and barley: of an aerating mill; of a machine for peeling raw coffee; and of a steam chimney, with interior tube to apply the heat of the discharged steam to warming the incipient water of the boilers.
 Preserved articles of food for exportation, viz., rice, Italian pasta, semola, ground and pearl barley, starch, sea biscuits, &c.

126 **VANSTYBEE, FRED., Brussels.** (Agent, M. Cuyllis, 55 Grassmarket Street.)
 Patent weaving machine.

127 **KESSELA, HENRI, Brussels.**
 Patent machine for moulding 20,000 bricks per day.
 Model of safety-machine.

128 **TROTTIER BROTHERS, Veeriers.**
 A shearing finishing-machine.

129 **FETT & DEWINGE, Liege.**
 Specimens of mules for spinning wool and cotton.

130 **HOUBREAU-DEFRAGIERE, —, Roulers.**
 Specimens of metallic combs and plates, for weaving.

131 **DELLAYE, ULRIK, Astorp.** (Agents, Poole & Carmichael, 4 Old Square, Lincoln's Inn.)
 Patent mowing machine, for all kinds of corn and weeds.

Patent sowing apparatus, for the sowing of corn.
 Patent atmospheric regulator, for purifying the air of rooms, and moderating the draught of chimneys and ventilators, &c.

132 **MERTZ, CHARLES, Ghent, Astorp.**
 Patent machine for iron in various cases.

133 **VAN MEELD, ADRIEN, van, Astorp.**
 Machines, invented by the exhibitor, for making combs, for grinding wool, for weaving drapery, and for weaving nets.

134 **SOCIÉTÉ DE PEUVRE, Ghent. M. Bergheman, Engineer and Inventor.**
 Knitting-frame, with new motion, by the exhibitor; and without knitting-machine.

135 **GODELLET, CHARLES, Ghent.**
 Apparatus, invented by the exhibitor, designed to replace the present method of fixing the yarn, and of weaving by the treadle. This apparatus is constructed for plain and figured fabrics, tanger and damasked linen, with small looms for making nets.

136 **ZYLAK & CO., St.-Jean-les-Needs, Brabant.**
 Specimens of pavement from Quennebec, and of polished porphyry.

137 **VAN ESCHEN, NARCISSE-GUTHRIE, Mouscron-St-Jean, Brabant.**
 Model of a patent iron bridge, six 40 feet long and 15 feet wide, designed to support a load of 17,000 lbs.
 Specimens of tubes made of sheet-iron, for bridges and tunnels.

138 **SIBEN, JOSEPH, Ghent.**
 Specimens of incise, made of the brown oak of Bel- for ceilings.
 Specimen of a trunk of an oak tree, divided into

139 **VANSEN, ADOLPHE, Brussels.**
 Specimens of double-barrelled guns. Guns of calibre, will be tried by Bernard and
 Double-barrelled cartriges, with &

- Leclere's without soldering; for conical-pointed ball. Single-barrelled carbines, of same construction.
Several pairs of pistols, in cases, with barrels of cast-steel.
Ornamented Turkish sabre, with damask blade.
Cutlas, with damask blade. Hanger, in incrustated steel.
Patent pistol, for shooting without powder.
Patent index-target, for the use of pistol practice, showing by numbers how it has been touched by the balls. The same smaller size, for gallery practice.
- 140 HENRIARD, M. J., *Namur*.
Patent percussion rifle.
- 141 RENKIN BROTHERS, *Liege*.—Manufacturer.
Collection of single and double-barrelled percussion fowling pieces; single-barrelled flint guns for the colonies and coast of Africa; muskets of different prices, qualities, and models; military rifles; "à tige," and conical balls; cavalry holsters and pocket pistols.
- 142 ROYAL CANNON FOUNDRY, Director Mr. C. Frédéricix, Colonel of Artillery, *Liege*. (Agent in London, M. Cuyllits, 55 Gracechurch Street.)
Cannon, Prussian model, rough, made of cast-iron; the same, Netherland model. Short Belgian model piece. Battery piece, rough cast iron. Light howitzer, Belgian model. Resting mortar, Belgian model; and two testing globes for the same. Bombs. Eccentric howitzer and round shot.
- 143 ANCIEN & Co., *Liege*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Double and single barrelled guns. Muskets, fowling-pieces, and guns for exportation. Portuguese and cavalry carbines. Duelling, cavalry and pocket pistols. Various plain gun-barrels.
- 144 THONET, J., *Liege*.—Manufacturer.
Gun ornamented with gilt silver.
Pair of Scotch inlaid pistols.
- 145 LEPAGE, —, *Liege*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
A collection of ornamental arms, consisting of double-barrelled guns. Rifles. Holster-pistols. Duelling-pistols. Pocket-pistols, &c.
- 146 PLOMDEUR, NICOLAS, *Liege*.—Manufacturer.
Gun, ebony stock. Pair of pistols, ebony stocks. Four English-fashioned guns. Gun, Lefaucheux system. Pair of "Scotch," ivory stocks. The same, double-barrelled. Miniature pistols, with case. Pair of locks. Six-barrelled pistol. Drawing-room pistol. Guard for a gun.
- 147 MALHERBE, LOUIS, *Liege*.—Manufacturer.
Double-barrelled fowling-pieces, percussion and flint systems. Various highly ornamented single-barrelled guns. Various single-barrelled guns and rifles. Pocket-pistols, single and double barrelled. Duelling and cavalry pistols.
- 148 LEDENT, MATHIEU, *Liege*.—Manufacturer.
Patent locks for military and ornamental fire-arms.
- 149 DOUTREWE, FRANCOIS-JOSEPH, *Liege*.—Manufacturer.
Patent gun made after the needle system, loads at the breech.
- 150 BERNIMOLIN, NICOLAS, & BROTHER, *Liege*.—Manufacturers.
Double-barrelled gun, loads at the breech. Five guns, damasked, English style. Pair of duelling-pistols, with ebony stocks. Two pair of Delvigne pistols.
- 151 LARDENOIS, NICOLAS CHARLES, *Liege*.—Manufacturer. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Rifle, with accessories, Swiss style. Double-barrelled gun highly chased. All the pieces of this gun, with the exception of the barrel and lock, were executed by Mr. Christian Lenders.
- 152 TINLOT, JEAN-MICHEL, *Herstal, Liege*.—Manufacturer.
Double-barrelled gun, with carved stock; style Louis XV.
- 153 DEHOUSSE, LOUIS, *Liege*.—Manufacturer.
Case containing a pair of duelling-pistols with carved ebony stocks, and accessories; likewise a pair of miniature pistols with ivory stocks. Double-barrelled gun with accessories, Turkish damasked barrel, English stock, mountings highly chased.
- 154 FALISSE & TRAPMAN, *Liege*.—Manufacturers.
Gun and rifles, needle system. Series of nipples. Models for military arms and fowling pieces. Models for percussion caps for fowling pieces, &c. Models of gas-burners.
- 155 TOUREY, HYACINTHE, *Liege*.—Manufacturer.
Double-barrelled gun, work of art. Double-barrelled rifle, feather trigger, with accessories, very accurate. Double-barrelled gun (bright barrelled). A pair of chased pistols. Pair of duelling pistols.
- 156 GROETAERS, Captain J. B., *Antwerp*.—Inventor.
Patent instrument for measuring inaccessible distances; principally for the use of military and naval men.
- 157 NEYT, ADOLPHE, *Ghent*.—Designer.
Drawings showing the plan of an artillery battery, for firing at once, either directly or obliquely, applicable to frigates and coast batteries.
- 158 MONTIGNY & FUSNOT, *Brussels*.
Three infantry guns, new system by the exhibitor.
- 159 DUFOUR, —, *Neufvilles, Hainault*.—Inventor.
A patent plough.
- 160 DENIS, JEAN BAPTISTE, *St. Leger, Luxembourg*.—Inventor.
Patent ploughs.
- 161 LE DOCTE, HENRI, *Lenze, Hainault*.—Inventor.
Patent branch hoe.
- 162 VERBIST, EUGENE, *Nivelles, Brabant*.—Inventor.
Plough, called "tourne-oreille."
- 163 CLAES, PAUL, *Lembecq, Brabant*.—Inventor.
Improved Scotch seed-bag. Articulated cast-iron roller.
- 164 SCHEIDWEILER, MICHEL, *St.-Josse-ten-Noode, Brabant*.—Inventor. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Mill for agricultural seeds on a moveable waggon.
- 165 ROMEDENNE, ANTOINE, *Erpent, Namur*.—Inventor.
Plough with double-head. Moveable harrow.
- 166 DUCHENE, JEAN JOSEPH, *Asche-en-Rifail, Namur*.
Churns and buckets.
- 167 TRAIN, BERNARD, *Huy*.
Winnowing-machine for corn.

- 168 VAN MAELE, EDOUARD, *Thielt*.
Patent double plough for light soils. The same either for heavy or light soils.
- 169 ODEURS, JEAN-MATHIEU, *Marlinne, Limbourg*.
Single and double plough.
- 170 BERCKMANS, JEAN FRANCOIS, *Blaesvelt, Antwerp*.
Improved Flemish plough.
- 171 D'OMALIUS-THIERY, G., & SONS, *Anthisme, Liege*.
Improved ploughs and hoe.
- 172 VALÉRIUS, BENOIT, *Brussels*.
Theoretical and practical treatises on the manufacture of iron and cast-iron in Belgium.
- 173 VON SCHENDEL, P., *Brussels*. (Agent in London, M. Cuylits, 55 Gracechurch Street).
Model of descriptive geometry for the demonstration of perspective.
- 174 BERDEN, F., & Co., *Brussels*.
Cabinet-pianoforte in rosewood.
- 175 MAHILLON, CHARLES, *Brussels*.
Counterbass, violoncello, bugles, ophycleide, trombone, horn, trumpets, cornet-à-piston, clarinet mouth-piece.
- 176 JASTRZEBSKI, FELIX, *Brussels*.
Upright pianofortes; inlaid ebony; carved rosewood and maple wood.
- 177 DANCHE, CLAUDE-FRANÇOIS, *Brussels*.
Violins, after the models of Straduarus, Guarnerius, and Amati. Violoncello, on the model of Straduarus. The same, with six cords.
- 178 DEMANET, C. A. J., *Ixelles, Brabant*.
Machine for transforming alternate movement into a continual circular movement.
- 179 VERHASSELT-D'OUTRELEPONT, F., *Brussels*.
Patent harmonium melodium for churches. The same for drawing-rooms. Patent double piano-harmonium, capable of being separated at pleasure.
- 180 STERNBERG, LOUIS, *Brussels*.
Cabinet-pianoforte with triple string, in Amboyna wood. Another of the same.
- 181 VOGELSANGY, FRANÇOIS-JACQUES, *Brussels*.
Patent grand-pianoforte in rosewood, patent upright-pianoforte in rosewood, with regulating movement.
- 182 GÉRARD, ANTOINE-JOSEPH, *Liege*.
Compass for dividing circles. Alarm-bells. Self-supplying pen. Model of an instrument for measuring distances. All these articles are patented.
- 183 DE HENNAULT, J. B., *Fontaine-l'Évêque*.
Moveable telescope, with fixed level.
- 184 LATINIE, ALEXANDRE, *Soignies*.
Spectacle glasses from No. 6 to the highest number. Achromatic magnifying glasses. The same, common spectacles for short-sighted persons.
- 185 LAMBERT, G., *Mons*.
Model of patent mining-ladder. Patent compass, with fixed level for mining or field operations.
- 186 AERTS, F. G., *Antwerp*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Patent grand-pianoforte, with oblique strings, rosewood case.
- 187 CHAMPAGNE, DONSTIENNES, *Hainault*.
Mechanical fore-arm.
- 188 DEFFAUX, JEAN-BAPTISTE, *Brussels*.
Pianofortes in the style of Louis XV., and cabinet-pianofortes.
- 189 DE BAST, CAMILLE, *Ghent*.
Bleached and unbleached calicos.
- 190 CANFYN-NIMEGEERS, *Renaix*.
Cotton checks. Madras handkerchiefs.
- 191 DE BEHAULT-DUCARMOIS, *Termonde*.
Cotton bed-covers.
- 192 DE CUYPER, JEAN-FRANÇOIS, *St. Nicolas*.
Common cotton checks. Double and triple warped cotton checks. Cotton check tickings. Doubled warped fancy cotton checks. Checks and stripes. Checks and stripes, double warped. Gala plaids, cotton warp. Plain and coloured gala plaids. Woollen shawls.
- 193 JANSSENS, DE DECKER, *St. Nicolas*. (Agent in London, M. Cuylits, 55 Gracechurch Street.)
Flannels and gala plaids.
- 194 SIMONIS, IWAN, *Verviers*.
Specimens of cloth and woollen stuffs.
- 195 BIOLLEY, FRANCOIS, & SONS, *Verviers*.
Specimens of cloth and woollen stuffs.
- 196 DUBOIS, GÉRARD, & Co., *Verviers*.
Specimens of winter stuffs for trousers. Beaver and other cloths for paletots. Black kerseymeres for summer use. Mixture for winter. Specimens of fabrics for summer wear.
- 197 SIRTAINÉ, FRANCOIS, *Verviers*.
Various pieces of cloth and kerseymeres.
- 198 DORET, LÉONARD, *Verviers*.
Specimens of different coloured woollen cloths.
- 199 PIRENNE & DUESBERG, *Verviers*.
Specimens of kerseymeres and beaver cloth, black, blue, green, brown, grey, and olive.
- 200 PIRON-THIMISTER, *Francomont, Liege*.
Kerseymeres and zephyr cloth.
- 201 OLIVIER & Co., *Verviers*.
Silk and woollen livery cloth; double-warped, Asia blue, and Asia bronze.
- 202 SNOECK, C. J., *Herve, Liege*.
An assortment of zephyr cloth, fine cloth, and woollen kerseymeres of various colours, yellow, black, blue, bronze, scarlet, &c.
- 203 DEHESELLE, A. J., *Thimister, Liege*.
Pieces of flannel and dumet.
- 204 XHOFFRAY, CLEMENT, & Co., *Dolhain-Limbourg, Liege*.
Worsted yarn for plaids, tweeds, fine flannel, tartan shawls, &c.
- 205 VANDERSTRAETEN, A., & Co., *Liege*.
An assortment of woollen stuffs and kerseymeres.
- 206 D'HONT, JEAN, *Roulers*. (Agent in London, M. Cuylits, 55 Gracechurch Street.)
Specimens of satin, chiné and embroidered.

- 207 METDEPENNINGEN, GUSTAVE, *Antwerp*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Silk for laces, for sewing, and for fringing.
- 208 DOBBELAERE-HULIN, *Ghent*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of unbleached linen, spun and woven by hand; and of sail-cloth.
- 209 AMEYE-BERTE, R., *Ghent*.
An assortment of flax sail-cloths; flax linen for sheets; linen for bleaching and dyeing; specimens of fine linen; all woven by steam power.
- 210 PYN & VAN PELT, *Tamise, East Flanders*.
Samples of hemp yarn.
- 211 WILFORD, W., *Tamise, East Flanders*.
Samples of sail-cloths.
- 212 COOREMAN, A. J., *Rebecq-Rognon, Brabant*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Samples of linen thread for lace.
- 213 VERCRUYSSSE, FERDINAND, *Deerlyck, West Flanders*.
Raw, retted, and heckled flax, crop 1850. Thread and piece of linen, from the same flax. Rollers, with separated disks.
- 214 VERRIEST, P., *Courtrai*.
Specimens of coloured quilts.
- 215 VAN ACKERE, JEAN-CONSTANT, *Wevelghem, West Flanders*.
Extra-fine linen, warp of double-twisted thread, wool single, spun by hand. Unbleached linen, spun by hand. Handkerchiefs of mixed linen, power-loom. Unbleached cambric handkerchiefs. Lawn handkerchiefs. Flax in various states of preparation.
- 216 BERTHELOT & BONTE, *Courtrai*.
Specimens of flaxen thread, made by hand.
- 217 DU JARDIN, CONSTANT, *Courtrai*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of white and damasked napkins. Table-cloth, with portrait of the King of the Belgians.
- 218 DE BRABANDERE, PIERRE-FRANCOIS, *Courtrai*.
Bleached and unbleached power-loom linen. Bleached and unbleached mixed linen tick. Dyed linen handkerchiefs.
- 219 VAN OOST, PIERRE, *Hooglede, West Flanders*.
A piece of linen.
- 220 THIBAU-ACCOU, *Iseghem, West Flanders*.
A piece of bleached linen, spun and woven by hand, having 7,000 threads in the warp.
- 221 DECOCK-WATTRELOT & BAUDOUIN, *Roulers*.
Strong bleached and unbleached linen, various sorts. Orleans, plain and figured. Alpacas, plain. Paramattas.
- 222 PARMENTIER, P., *Iseghem, West Flanders*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Pieces of fine unbleached linen of 6,000, 7,000, and 8,000 threads in the warp. White cambric handkerchiefs.
- 223 DEMEULENAERE, EUGÈNE, *Moorslede, West Flanders*.
Reeds of linen thread, spun by hand, various qualities.
- 224 HARTOG BROTHERS, *Mechlin*.
Pieces of Russian linen.
- 225 VAN NUFFEL & COVELLIERS, *Antwerp*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Canvas for painting, oil-cloth, and wax-cloth.
- 226 LA COMMISSION ADMINISTRATIVE DE LA MAISON DE CORRECTION DE ST. BERNARD, *Antwerp*.
Pieces of white Russian and cream-coloured linen. Striped and checked Gantes and Brabantes. Pieces of dowlas. Double Ravensduck. Sheetings. Striped and checked Listados. Duck and various other linens.
- 227 MARYNEN-VUES, J., *Turnhout*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Linen tick, prepared, and as it comes from the loom.
- 228 HAEGENS, CHARLES, *Zele, East Flanders*.
Samples of hempen sail-cloth, made by hand. The same, made of waste hemp.
- 229 BONGAERTS, —, *Antwerp*.
Bags, without seams, made on the hand-loom. Gumbag.
- 230 SOCIÉTÉ LINIÈRE GANTOISE, *Ghent*.
Specimens of tow and linen thread. Grey Lokses twist. Yellow Courtrai twist.
- 231 MOERMAN-VANLAERE, *Ghent*.
An assortment of sail-cloths and linens. Bleached Everdocks. Coletas. Bleached Russias. Specimens both in flax and tow.
- 232 DE SMEDT-BRECKPOT, *Alost*.
An assortment of unbleached linens.
- 233 DOMMER, T., *Alost*.
A variety of cambric handkerchiefs. Napkins. Table-cloths. Specimens of fine unbleached linen. Unbleached napkins, with crests. White and coloured blinds. Various coloured carpets.
- 234 ELIAERT-COOLS, *Alost*.
Thread for sewing and knitting.
- 235 CUMONT-DECLERCQ, *Alost*.
A collection of white and coloured sewing thread, of a very superior quality. The same, common quality.
- 236 CORNELIS-VAN OVERLOOP, J., *Zele, East Flanders*.
Sail-cloths, of different qualities and sizes.
- 237 GOENS, L. J., *Termonde*.
New flat hemp cables. Flat wire cables, preserved by a new method from oxidation.
- 238 BOSTEELS-GEERINCK, J., *Zele, East Flanders*.
Various pieces of sail-cloth.
- 239 DEROUBAIX, HENRI, *Courtrai*.
Samples of figured tick, all linen. Unbleached linen.
- 240 LEMAIRE, DESCAMPS, & PLISSART, *Tournai*.
Stuffs for trousers, in linen and cotton, mixed. The same, in cotton and wool, mixed.
- 241 GILSON & BOSSUT, *Tournai*.
Samples of cotton stuffs for trousers, plain, fancy, and dyed. Samples of cotton and linen, mixed, for trousers, plain and fancy. Samples of wool and cotton, for trousers and paletots, plain and fancy. Samples of plain linen fabrics.
- 242 LIENART-CHAFFAUX, Widow, *Tournai*.
Cotton and linen stuffs, for trousers. The same, linen and cotton. The same, wool and cotton. Wool and cotton mixtures for clothing.

- 243 VERHULST, DE RONGÉ & Co., *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Various specimens of common cotton, chiné, and satined checks. Common, satined, and silk-satined jaconet. Superfine and silk satined cravats.
- 244 CATTEAUX BROTHERS, *Brussels*.
Fabrics for trousers, in cotton, linen, wool and cotton mixture, linen and cotton, cotton warp, and linen woof.
- 245 CATTEAUX-GAUQUIÉ, *Courtrai*.
A large assortment of stuffs for trousers, including fine and mixed cotton cloths, kersymeres, figured mixtures, prunellas, evergreens, ribbed, plain, and figured stockinettes, &c. Also linens and cambrics, siamese and swanskins, handkerchiefs, &c.
- 246—250 PETIT-NOEL, —, LEROUGE, —, DEMYTTENAERE, M., DUJARDIN, L., AND TERREIN & Co., *Mouscron, West Flanders*.
Stuffs for trousers, in cotton, wool and cotton, and linen and cotton.
- 251 SCHELSTRAETE, LOUIS, *Courtrai*.
Cotton stuffs, and cotton and linen fabrics, for trousers.
- 252 VANDENHERGHE, JEAN, *Courtrai*.
Cotton, wool and cotton, and cotton and linen fabrics, for trousers.
- 253 HOUDIN & LAMBERT, *Brussels*.
Varnished calf-leather for boots and shoes.
- 254 TAILLET, VINCENT, *Brussels*.
Specimens of boot legs and boot fronts. Polished calf-skins. Grey calf-skins. Calf-skin, prepared for polishing. Calf-skins, for spinning factories. Neat's leather, prepared for varnishing. Varnished calf-leather, for carriages.
- 255 VAN MOLLE, EGIDE, *Asche, Brabant*.
A plough-horse collar.
- 256 LADOUBÉ-LE JEUNE, CH., *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of harness, saddles, bridles, martingales, &c. Samples of curried leather.
- 257 HANSSENS-HAP, *Vilvorde, Brabant*.
Specimens of stuffs for furniture. Furnishings for chairs, sofas, &c. Improved horse-hair damasked furniture stuffs, both sides alike. Horse-hair stuffs for caps. Horse-hair stuffs, damasked, satined, &c., for furniture. Damasked linen, napkins, and table-cloths. Specimen of very superior napkins, with crests. Various qualities of table linen. Desert napkins, with fringes. Unbleached breakfast table-cloths. Samples of bristles, prepared and bleached for painting brushes.
- 258 WEBER, GEORGES, *Brussels*.
Assortment of purses and cigar-cases.
- 259 WEINKNECHT, *Brussels*.
Fur drawing-room carpets. Fur cloaks. Ornamented foot-stools.
- 260 FASBENDER, HERMAN-JOSEPH, *Brussels*.
Patent varnished cow-skin. Black skin for harness and bridles. Yellow skin for bridles.
- 261 LOMBAER, *Jette-St-Pierre, Brabant*.
Varnished calf-skins for boots and shoes. Various coloured skins.
- 262 BAUCHAU-DE BARÉ, AMBROISE, *Namur*.
Tanned skins for soles and pump leathers. Assortment of skins of various qualities.
- 263 CABU-FÉVRIER, FRANÇOIS, *Namur*.
Collection of shoemakers' materials, consisting of boots of various descriptions, buskins, shoes of improved make, and articles of the same kind for ladies.
- 264 TROOSTENBERGHE, DÉsiré, *Bruges*.
A pair of shoes, without seams.
- 265 SOMZÉ-MAHY, HENRI, *Liege*.
Brushes, for personal and domestic use. Brushes, made of various materials, for the use of the stables, &c. Samples of bristles, horse-hair, and other articles, used in the manufacture of brushes.
- 266 BOUVY, ALEXANDRE, *Liege*.
Grey and polished calf-skins.
- 267 MASSON, CHARLES, *Huy*.
Leather used by shoemakers and coal-miners.
- 268 SOMZÉ, junior, *Liege*.
Brushes for cleaning cannon. Patent broom, for cleaning windows.
- 269 VANSTRAELEN, JOSEPH, *Hasselt*.
Gentlemen's and ladies' saddles. Complete set of tilbury harness.
- 270 KISTEMAECKERS, H., *Antwerp*.
Various kinds of horse-hair, for sieves. Dyed horse-hair.
- 271 VAN ALTEYNES-SCHOCKEEL, *Louis, Ypres*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Ox-hides, for soles. Rosettes, for harness and shoemakers. Calf-skins. Bark.
- 272 DUSAUCHOIT, EDOUARD, *Ghent*.
Dyed and prepared cat-skins, to imitate sable. An assortment of dyed cat and rabbit skins. Gloves made of rabbit skin, raw and prepared. Drawing of a machine for preparing leather.
- 273 HESNAULT & BROTHER, *Ghent*.
Dyed and tanned rabbit and goat skins. Dyed and prepared dogskins.
- 274 VANDENBOS-POELMAN, *Gustave, Ghent*.
Pair of varnished calf-leather top-boots. Pair of shooting-boots made of Russian leather. Waterproof boots for fishing and snipe shooting. Shooting-shoes and gaiters. Varnished calf-leather half-boots.
- 275 CASTERMAN & SONS, *Tournai*.
A collection of printed books.
- 276 HAYEZ, MARCEL, *Brussels*.
Books, including *Annuaire de l'Observatoire*; *Mémoires de l'Académie*; *Bulletin de l'Académie*; *Traité des Fonctions Elliptiques*, *Théorie des Probabilités*; *Dictionnaire Universel des Poids et Mesures*; *Annales de l'Observatoire*; *Bulletin de Statistique*, *Nouveaux Mémoires de l'Académie*; *Chronique Belges inédites*, &c.
- 277 BRIARD, JEAN-HENRI, *Ixelles, Brabant*.
Specimens of Bibles and New Testament. Bible printed on Chinese paper.
- 278 PARENT, F., *Brussels*.
Bivort's Album de Pomologie, containing written and illustrated descriptions of the most remarkable and valuable fruits.
- 279 LESIGNE, THÉODORE, *Brussels*.
Books: *Statistique générale de la Population de la Belgique*; and *Statistique agricole de la Belgique*.

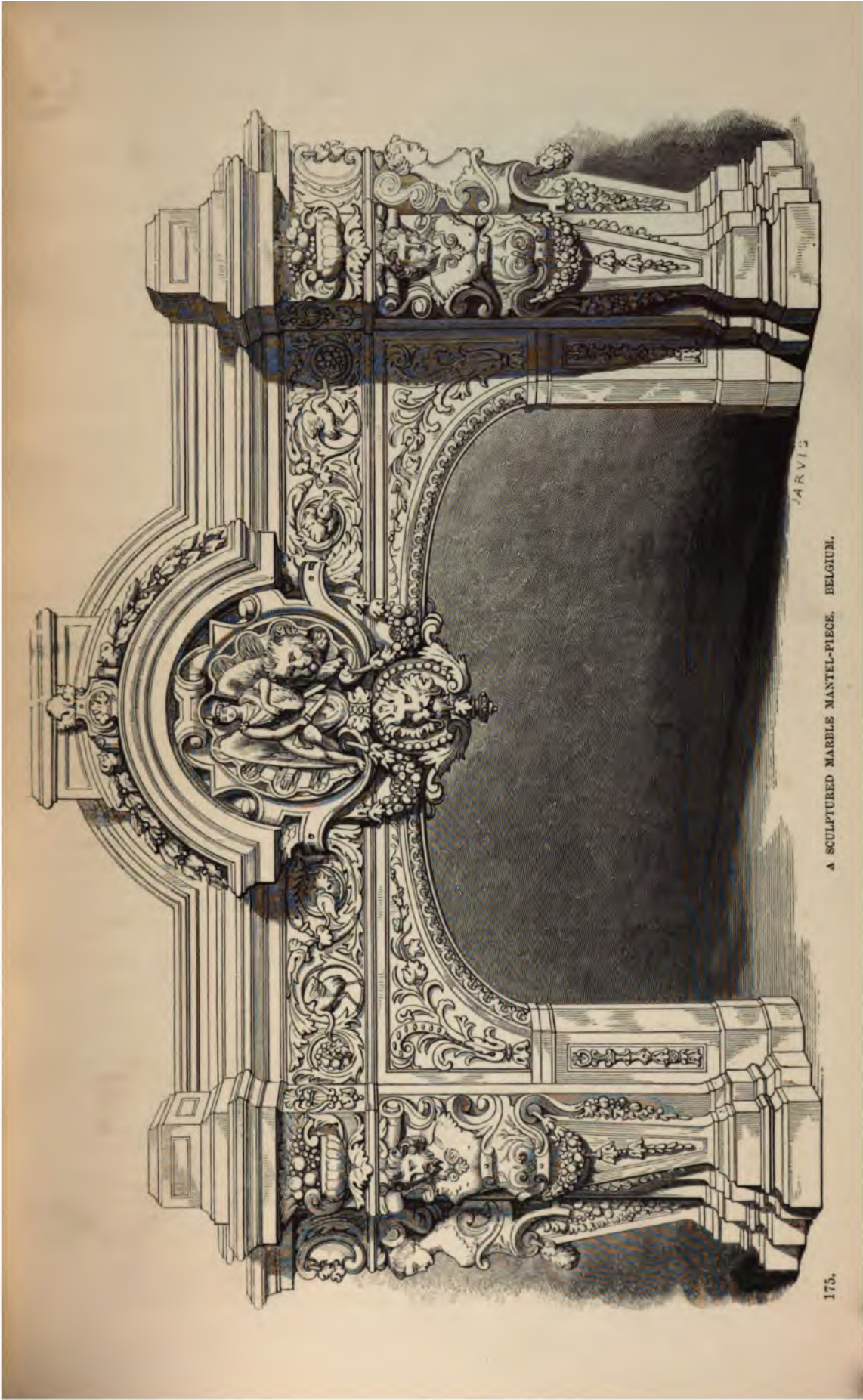
- 280 ZEGELAER, ELIE, *Brussels*.
Various-coloured sealing-wax.
- 281 TARDIF, EUGÈNE, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Letter envelopes.
- 282 WESMAEL-LEGROS, ADOLPHE, *Namur*.
Roman missals and breviary, printed in black and red.
- 283 HENRY, PÉREPETE, *Dinant*.
Printing pasteboards. Specimens of card paper.
- 284 GODIN, J. L., & SONS, *Huy*. (Agent, M. Cuylits, 55 Gracechurch Street.)
A collection of papers.
- 285 HANICQ, PIERRE-JOSEPH, *Mechlin*.
Books of the Roman Liturgy, printed in red and black.
- 286 GLÉNISSON & VAN GRNECHTEN, *Turnhout*.
Marbled, plain, coloured and fancy papers. Prints. Playing-cards.
- 287 IDIERS, A. J., *Brussels*.
Turkey red yarn, and plain calicoes, in Turkey red, and fast colours.
- 288 DIETENS, JEAN-BAPTISTE, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Printed shawls. Scotch cachemeres.
- 289 VERHULST & CO., *Brussels*.
Specimens of printed calicoes.
- 290 VERREY, JACQUES, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Plain and printed corahs. Handkerchiefs of rich patterns. Corded "pongée" handkerchiefs. A silk-satin dress.
- 291 SERVAIS, JEAN BAPTISTE, *Louvain*.
Blue cotton and linen fabrics, shaded in the dye.
- 292 THIBAU-SETTE, PIERRE, *Iseghem, West Flanders*.
Power-loom coloured cloths, for the making of blouses, ladies' robes, and paletots, of very fine texture.
- 293 DEWEWEIRNE, JOSEPH-JOSSE, *Ghent*.
Specimens of printed calicoes. Skins dyed and printed.
- 294 VOORTMAN, ABRAHAM, *Ghent*.
Pieces of printed calico, for shawls, handkerchiefs, and furniture.
- 295 SERVAES, M. F. *Alost*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Printed cotton stuffs, for neck and pocket handkerchiefs, and other purposes.
- 296 VERDURÉ-BERGE, CHARLES MARTIN, *Tournai*.
Velvet imitation carpets of mixed fabrics, representing the arms of the ancient provinces of the Netherlands and various allegorical designs.
- 297 MANUFACTURE ROYALE DE TAPIS DE TOURNAI.
Directors, OVERMAN and DELEVIGNE, *Tournai*.
(Agent, M. B. A. Grantoff, 4 Lime Street, City.)
Specimens of carpets: washable and imitation Smyrna carpets; Wilton carpets, &c.
- 298 POLAK, Mlle. FLORÉ, *Brussels*.
Designs for lace.
- 299 VANHAELEN, Widow, *Brussels*.
Imitation Brussels lace; a scarf; a short veil; a mantilla shawl; collars; flounces, 9 yards, and 4 yards and a half in length, respectively; a bertha; a pair of sleeves; a parasol; pieces of lace; a mantilla; head-dresses. Scarfs, pelerine, and handkerchief, application of Brussels lace.
- 300 LEMAIEUR-DETIGE & Co., *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
An assortment of laces, trimmings, fringes, &c., for furniture.
- 301 ROY, C. FRANÇOIS, *Brussels*.
Specimens of point lace, needle-worked.
- 302 MELOTTE, EUGENE, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
A flag, presented by His Majesty the King of the Belgians to the Royal Choral Society of Mehul, Brussels. Embroidered by the exhibitor.
- 303 VAN HALLE, JOSEPH, *Brussels*.
Church ornaments, ornamented with gold, and set with precious pearls. Albs in Brussels lace.
- 304 ATELIER DE NOTRE DAME, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Brussels lace, guipure and point work.
- 305 DELERAYE, —, *Brussels*.
Specimens of real net lace:—A scarf of worked point lace. A flounce of the same. A small veil and a bertha, in cushion work. A band in point (needle) work. Specimens of tulle:—A flounce, bertha and collar, in point (needle) work. A handkerchief and bertha in cushion work.
- 306 JOREZ, LOUIS, jun., *Brussels*.
A large oil-cloth carpet. Oil-cloths for passages, and for carriages. Common oil-cloths. Soft oil-stuffs. Table-cloths, printed and gilt. Taffetas, gum, glazed, and black. Waterproof cloths, highly-finished cloaks of the same; hunting overalls. Cow-skins, tanned and dressed for hoods. Enamelled calf-skins; the same for boots and shoes, and for saddlery. Cow-skins for graining and varnishing. Black enamelled sheep-skins, and of various assorted colours. Glazed papers for ornamental purposes.
- 307 STOCQUART BROTHERS, *Grammont*.
Articles of black silk lace produced by machinery and by hand. A square shawl. Two half shawls of point lace. Lace scarfs. Ornamented mantilla, veils, and bertha. Parasols plain, mounted, &c. Lace head-dresses and lappets. Edging for lace trimmings. Articles in blond white silk, produced by machinery and by hand:—A half shawl of point lace. Parasols, veils, head-dresses, berthas, of various descriptions. A bonnet foundation, representing the capture of the city of Grammont in the third century. Articles in white thread lace, produced by machinery and by hand:—A small veil; a bertha; head-dresses; and lappets.
- 308 NAEIJTJENS, GUILLAUME, *Brussels*.
Brussels lace and guipure; exhibiting the application of point lace and guipure work.
- 309 REALLIER, EMMA, *Brussels*.
A lace pocket-handkerchief, in point needlework, wholly of linen.
- 310 HEUSSCHEN-VAN-EECKHOUDT & Co., *Brussels*.
Lace articles in point needle work, point-de-venise, and hand net-work.
- 311 ROBYT, LOUIS, *Brussels*.
Lace in Brussels application and guipure.

- DERHAGEN, VAN OVERLOOP, *St. Gilles, Brabant*. (Agent, M. Charlwood, 38 Coleman street, City.)
lace.
- DERKLEN-BRESSON, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
on lace, point Mechlin, guipure, and Brussels
- AYON BRUNFAUT & Co., *Brussels and Ypres*.
s of Valenciennes lace, and of Brussels lace.
- DESMISSEN, PROSPER, *son., Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
s of real and imitation Brussels lace.
- ENNE, SOPHIE, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)
lace in needle and curtain work.
- DU JARDIN-LAMMENS, *Brussels*.
in tapestry, raised work, ornamented with silk ground. Cushion in raised work, on silk another in zephyr wool, worked in roses and oak caps, embroidered in gold and silk; with arabesques, in a rose pattern, and of a superfine Lamp-rugs, knitted in wool and chenille, and wreaths. A pair of slippers worked in embroidery; another embroidered in gold, silk, sprig pattern. A pair of braces worked in silk and wool; and another in needle-work, and gold threads. A picture embroidered in silk and gold. Purses worked in crochet, fine silk. A pair of fire-screens worked in crochet, gold.
- WASHER, F., *sen., Brussels*.
s of tulle, Brussels net, made from British Nos. 36, 400, 450, 500, and 550.
- BELLONI-ANCE, L., *Brussels*.
trimming. Scotch dress shaded olive. Black lace with buttons, &c., of various kinds, colours, and cordings, Brandeburg Spanish point. Black White buttons. American dress. Buttons kinds, in wool and silk. Tassels. Knotted Marie-Louise dress trimmings in gold and silver, vases.
ornaments. Fine silver fancy lace. A flower-tipped wool, &c.
- VIOLARD, GEORGES, *Brussels*.
a new arrangement of designs for the manufacture.
- EVERAERT SISTERS, *Brussels*.
shawl of black lace. Trimmings of a dress, &c. A veil. Ladies paletot and specimens of point lace.
- DEBLISSEMENT DE ST. JOSEPH, *Verviers*.
s of Flanders guipure, and other sleeves of the
- DEEDT, Widow, *Sweveghem, West Flanders*.
s of cambric handkerchiefs. Muslin bands, sleeves.
- BECK & SON, *Courtrai*.
of Valenciennes lace. A piece of hand-spun linen cloth.
- DEBLAUWE-PEEL, JEAN, *Courtrai*.
s of Valenciennes lace.
- 326 BEERNAERTH & DECUYPERE, *Courtrai*.
Specimens of Valenciennes lace, made at Courtrai.
- 327 VAN STRAELEN, Madame, *Bruges*.
Specimens of Valenciennes lace, and lace collars.
- 328 BOUSSON, DE VLEIGHERE, *Bruges*.
Flounces for ladies' dresses in Flanders guipure lace.
- 329 DARTEVELLE & MOUNOUY, *Brussels*. (Agent M. Cuylits, 55 Gracechurch Street.)
An assortment of embroidered tulle.
- 330 TOLLENAERS, THERESE, *Bruges*.
Specimens of lace.
- 331 PATERNOSTRE, *Louvain*.
Specimens of pictures, &c., of scriptural subjects executed in the Gothic style.
- 332 NOEL, —, *Louvain*.
Specimens of military accoutrements in wool, consisting of epaulettes, counter-epaulettes, &c. Specimens of superior accoutrements of the same kind, subaltern officers and musicians.
Specimens of similar accoutrements for city police, and for artillery, infantry, and cavalry officers.
Specimens of laces of various descriptions: gold, worsted and gold, in thread, worsted and cotton, worsted. Silver aiguillettes. Coaster-epaulettes, embroidered, &c.
- 333 VAN KIEL, SISTERS, *Mechlin*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of Malines or Mechlin lace.
- 334 BERENHARTS, ALEXANDRE, *Antwerp*.
A flounce, ten yards in length, embroidered on fine net, in imitation of real lace-work. A scarf, bortha, head dress, and sleeves, of the same fabric. A pocket handkerchief of real cambric, with embroidered edge of fine net, also in imitation of lace.
- 335 PAQUET, MARIE, *Antwerp*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of imitation lace.
- 336 WILL, MEYER, & Co., *Antwerp*.
A tulle dress, with flounces, embroidered in crochet by hand.
- 337 HAMMELRATH, PIERRE HENRI, *Ypres*.
Specimens of Valenciennes lace, made at Ypres.
- 338 SOENEN, FLORIMOND, *Ypres*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of Valenciennes lace, made at Ypres.
- 339 VAN LOO, E. J. & F., *Ghent*. (Agent, M. Cuylits, 55 Gracechurch Street.)
A shawl of black silk Brussels lace, *appliquée*.
- 340 PLETTINCK, MABILDE, *Ghent*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of flounces in Brussels lace, *appliquée*.
- 341 HAECK, ISABELLE THERESE, *Destelberghe-les-Ghent*.
Lace veil, Brussels *appliquée*, on a ground of real net.
- 342 FRETIGNY, LOUIS, *Wetteren*.
Table-cloths of mixed fabric, worsted and cotton; also Milanese table-cloths, in colours; others of worsted and cotton, on a black ground, and of pure wool.
Oriental tapestry, *portières*. Woollen rugs, in seven colours. Cambric muslins, brocaded, pinked, and embroidered. Point lace, white damasks, bath cloths, napkins, &c.

- 343 VAN NIEUWENDORG BROTHERS, *Lokeren*.
Grey felt hats; shorn-map hats; silk hats, with canvas and felt bodies; hats for the military, clergy, &c.
- 344 ANCHIAUX, JOS., *Lokeren*.
Felt hats for the military, for the clergy, and for the upper classes; shorn-map hats of various qualities.
- 345 VAN BENEDEEN-BREUERS, *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of corsets, without seams.
- 346 VAN BENEDEEN, WIDOW, *Brussels*.
Specimens of corsets, without seams; of cotton fabric, which can be laced quickly. Corset made of a satined mixture, &c.
- 347 JACQUOT, FRANÇOIS, *Brussels*.
Specimens of military felt and beaver hats. Flemish felt. Silk hats, of superfine and common quality. Grey felts for settlers. Hat models and blocks.
- 348 HEGLE, CHARLES, *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
An assortment of kid gloves.
- 349 BERGEE, MADAME, *Brussels*.
Specimens of corsets.
- 350 DEKETELAERE, —, *Bruges*.
A complete collection of sabots (wooden shoes).
- 351 LIÉVAIN, LOUIS, *Mechlin*.
An assortment of felt and silk hats.
- 352 MONNOYER, PIERRE JOSEPH, *Namur*.
Table knives, mounted in silver, and dessert knives.
- 353 DRJON, ÉMILE, *Gosselies, Hainault*.
Samples of iron nails, forged by hand.
- 354 LEFEBVRE, VICTOR, & CO., *Chercq-lez-Tournai, Hainault*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Nail-pins; the same, for shoes. Pegs and sparables of iron; the same, for glaziers. Rivets.
- 355 VANDERCAMER, JACQUES AUGUSTE, *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Vases of hammered zinc, with ornaments, cast and chased.
- 356 PUISSANT, F., *Court-St.-Etienne, Brabant*.
An iron apparatus, adapted for the use of dealers in bullion.
- 357 GOR, JACQUES, *Brussels*.
A strong box of iron, with double doors; the outer one, being let down, forming a writing-desk.
- 358 SIERON, LOUIS, *Brussels*.
Specimens of nails.
- *359 MATHYS, JEAN, *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
A strong box, of new construction, in the form of a buffet. Double-cased iron escrutoire. An open stove, of polished steel, with gilt ornaments, in the style of Louis XV. A drawing-room stove, mounted in polished steel, with gilt ornaments and consoles. A furnace on a new principle, with double oven.
- 360 DUBOIS & CO., ACH, *Molenebeek, St. Jean-lez-Brussels*.
A mantelpiece. Group for a time-piece. Paper-presses. Candlesticks. A cigar-holder, and wax-tapers; inkstand; chandelier; candelabra; seal, ewer, and spittoon; all made of coppered zinc.
- 361 DE BAYAT, PAUL, *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Samples of nails, called *pointes de Paris*, manufactured from iron, zinc, brass, and copper.
- 362 MARCHEL, DESIRÉ, *Izelles-lez-Brussels*.
Specimens of laminated iron sleepers, with cast-iron chair.
- 363 DE LATOUR, ALBERT, *Schaerbeek-lez-Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Busts, executed in cast-iron, of the King and the Queen of the Belgians. Model of the letter-boxes adopted by the Belgian Government.
- 364 DE LA ROCHE, FRANÇOIS-THÉODORE, *Brussels*.
Patent fireproof strong box. Chimney-piece, with gilt ornaments of novel design. The same of polished steel, with ornaments in cast-iron. A stove, with fire-grate, which can be kept open or closed, at pleasure. A movable hearth-chimney, of metal, in imitation of steel.
- 365 DE ROSÉE, ALPHONSE, Baron, *Moulines, Namur*.
Specimens of brass kettles, pans, "neptunes," and oval-shaped saucepans.
- 366 MONCHEUR, F. & A., *Ardeennes, Namur*.
Ingots of cast-iron, for the manufacture of gun-barrel. Hammered bar-iron, for the same purpose.
- 367 SEVERIN, E., *Rochefort, Namur*.
Specimens of nails of various sizes. Nails for plank-floorings; for slates, ceilings, pumps, or boilers; nails for lathes and for saddlery. A variety of shoe-nails; heel and sole tips; double-pointed nails; nails for farrier purposes; roughened frost nails; iron hooks; hasps for window-curtains and other purposes.
- 368 AMAND, JOSEPH, *Ermelon-sur-Biert, Namur*.
Specimens of wrought and cast iron. Bars for gun-barrels, small arms, edged tools, scythes, tires of wheels, spades, &c.; for steam-boilers, boiler nails, ornamental mountings of fire-arms, and for general hardware purposes. Specimens of cast-iron, of first and second quality, for articles requiring ductility and great resisting power. Specimens of refined cast-iron.
- 369 BENOIT, FABER, *Marche-les-Dames, Namur*.
Specimens of ores of hydrated iron; of grey cast-iron, hard iron, cold-hammered iron, white iron, and soft iron. Specimens of iron, for converting into steel; bars for gun-barrels and iron hooping; cast-iron pots of various sorts, with covers; boilers, with lids; kettles, saucepans, stew-pans, &c.
- 370 DE CHIMAY, PRINCE, *Chimay, Hainault*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Bars of wrought iron, refined by charcoal, and especially used in the manufacture of arms.
- 371 REMACLE, J., & PÉRARD, JUN., *Liege*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of sheet-iron of various descriptions.
- 372 ORBAN, J. M. & SON, *Liege*.
Specimens of sheet-iron; tires for wheels; bar-iron; laminated iron; galvanized iron for springs, &c.
- 373 THONNART, LAMBERT, *Herstal*.
Steel bits for carriage and saddle-horses. Polished Wellington steel-bits, with smooth, straight, and curved mouth-pieces. Dutch bits, polished steel mouth-pieces, and a variety of other kinds.

- SOCIÉTÉ DE ST. LÉONARD, Liège.** (Director, M. REGNIER PONCELET.)
Specimens of ingots and bars of steel; iron plates; wares, plates, files and scythes of steel.
- PÉRÉE, JEAN FRANÇOIS, Liège.**
Copper tap-cock, with curved extremity. Improved straight, with secret spring. Three crucifixes, &c.
- DELLOYE-MATTHIEU, CHARLES, Huy.**
Specimens of sheet iron and sheet steel.
- CHAUDOIR, CHARLES & HYACINTHE, Liège.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of brass tubings, without solder.
- MACQUINAY BROTHERS & NEPHEWS, Liège.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of iron nails, made by hand.
- ELTAY, JEAN-JACQUES, Liège.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Saddles, stirrup-irons, and other riding appurtenances, in variety.
- AUCONIER, DELIRE, Widow, Châtelet.** (Agent, Mr. Laroche, 2 Old Trinity House, Water Lane.)
Various sorts of nails, wrought by hand.
- LIMELETTE, FRÉDÉRIC, Gosselies.**
Specimens of wrought-iron nails.
- LEVY-PRINS & PRINS, J. B., Brussels.**
Specimens of brooches, set in pearls, precious stones, &c. Also, set in emeralds, pearls, and other valuable stones. Chatelaines. Brilliant, sapphire, and emerald leaf-shaped diamond. Model of a bench, with tools for cutting and polishing diamonds. Exhibited for workmanship and cheapness.
- TULIN, N., Liège.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of cameos.
- FALLOISE, JOSEPH, Liège.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of inlaid articles in bronze, steel, copper, and silver.
- RICHIENS, JOSEPH, Antwerp.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of H.R.H. the Princess Charlotte of Belgium, in wax, coated by the electrotype process.
- BODIER, CHRISTIAENS, Brussels.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of cut crystal.
- CAPELLEMANS, J. B., Brussels.**
Large collection of crystal and glass. Samples of brushes for brushes.
- ZOUDE, LOUIS, & Co., Namur.**
Specimens of crystal, consisting of vases, drinking-cups, tumblers, wine-glasses, &c. Glasses and goblets of half crystal. Glasses and goblets, with various designs of eminent personages. A great variety of household ornamental vessels, in glass.
- NET, D. COUILLET, Hainault.** (Agent, M. Laroche, 2 Old Trinity House, Water Lane.)
Specimens of ancient stained window-glass. Modern window-glass. Unpolished window-glass. Silvered and unsilvered glass. Plain and coloured window-glass. Glass tiles, &c.
- 390 BENNET & BIVOBT, Jumet, Hainault.**
Specimens of window-glass.
- 391 DIERCKX, FRANÇOIS, Antwerp.**
Fine specimen of cut-glass dinner-service.
- 392 FRISON, JULES, & Co., Dampremy, Hainault.**
Window-glass, double and common thickness, and thin, called Bohemian glass. Unpolished window-glass. Fluted glass. Glass tiles.
- 393 CAPPELLEMANS, sen., & DABOUST, Brussels.**
Busts of the King and Queen of Belgium, Queen Victoria, and Prince Albert, in biscuit-porcelain, of life size, after Geefs. Various articles in biscuit-porcelain. Porcelain dinner and dessert service. Coffee service. Vases, baskets, &c.
- 394 TEMSONNET, G., & DARTET, Namèche and Samson, Namur.**
Fire-clay for manufactures in glass, pottery, dyeing, glazing, &c.
- 395 PASTOR, BERTRAND, & Co., Ardennes.**
Gas-retort for high furnaces. Fire-bricks for lining the inside of high furnaces. Specimens of fire-clay of Ardennes. Fire-bricks. Different sized tubes for drains.
- 396 LA COMMISSION ADMINISTRATIVE DE L'EXPLOITATION COMMUNALE, Marchin, Liège.**
Rough specimen of pudding-stone. High-furnace crucibles, made of the Marchin stone.
- 397 COSTE, FREDERIC, Tilly, Liège.**
Collection of crucibles, of which the base is graphite (plumbago). Another collection, of which the base is fire-proof clay.
- 398 SMAL-WERPIN, ALEXIS, Huy.**
Specimens of fire-bricks, small size.
- 399 BOUCHER, THÉOPHILE, Bandour, Hainault.**
Fire-clay gas retort. Specimens of fire-clay for lining furnaces, gas-ovens, &c. Sagger for baking porcelain by a new patent process.
- 400 DE FUISSEAUX, NICOLAS, Bandour, Hainault.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Various articles in porcelain: baskets, punchbowls, vases, dishes, plates, compotiers, &c.
- 401 DEVIS, E., Brussels.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Panels and paper-hangings.
- 402 DEMANET, CHARLES, Saint-Josse-ten-Noode, Brabant.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Inlaid rosewood table and sideboard.
- 403 LEFEBVRE, ALEXIS, Molenbeek-St.-Jean, Brabant.**
Paper-hangings and panels.
- 404 COUVERT & LUCAS, Brussels.**
Specimens of mosaic floors. Mosaic table, with fluted columns and inlaid pedestal.
- 405 PICARD-MASY, EDMOND, Brussels.**
Specimens of paper-hangings, glazed, velveteed, gilt, &c.
- 406 DE KEYN BROTHERS, St.-Josse-ten-Noode, Brabant.**
Mosaic flooring in wood, stained in a variety of colours.
- 407 DUSSAERT, JOSEPH, Brussels.** (Agent, M. Cuyllits, 55 Gracechurch Street.)
Vessel made in carton-pierre, plated. Frame of the same, gilt. Gilt pedestals, for candelabra.

- 408 GIBON, ELISA, *Brussels*.
Imitations of China lacquer. A screen, with gilt ornaments on both sides. Tables, of fancy designs. Chairs, with velvet trimmings.
- 409 MENGE, ANTOINE-GEORGE, *Brussels*.
Carved oak model of a fountain. Gothic carved oak frames. Gothic carved oak chapel. Small oak bell, lime-tree ornaments. Two candelabra stands. Oak tablets, gilt on both sides.
- 410 JEMIN, HENRI-JOSEPH, *Spa*.
Table, in plane-tree, painted with flowers, and veneered with maple-tree. Tea-chests, ornamented with flowers. Envelope-cases and handkerchief-boxes, with fancy designs. Ornamented desk, counter-box, and portfolios.
- 411 BRUNO, HENRI, *Spa*.
Table. Work-boxes. Portfolio. Tea-chest.
- 412 MISSON, EMILE & LOUIS, *Spa*.
Table, work-boxes, writing-cases, cigar and needle-cases, knitting and glove-boxes, and various other articles, all beautifully painted with flowers and designs.
- 413 MISSON, ARISTIDE, *Spa*.
Work-boxes, cigar-cases, tea-chests, jewel-casket, envelope-cases, baskets, music-desk, &c. All are painted with curious designs.
- 414 MARIN, JONAS-ETIENNE, *Spa*.
Round tables, with views of Spa and its environs. Ladies' work-boxes, with flowers and landscapes. Album, with a Chinese subject, in imitation of Chinese lacquer. Fire-screen, white ground, representing Chinese subjects. Large-sized work-boxes, with flowers and figures. Tea-chest and jewel-casket, similarly ornamented; and an album.
- 415 MASSARDO, JEANNE (Widow), *Spa*.
Large work-boxes, painted by Crehay; subjects: The Indecision, and the Reconciliation. Smaller ones, by Henrard and Rainkin. Jewel-caskets, by the same. Ornamented albums. Tables, fire-screens, and baskets, ornamented with flowers and landscapes.
- 416 DE JONGHE, AMBROISE, *Bruges*.
Specimens of ornamental inlaying, designed and executed by the exhibitor.
- 417 COLFS, JEAN-FRANÇOIS, *Antwerp*.
Drawing-room chair, arm-chair, and tête-à-tête.
- 418 DE RAEDT, JEAN-GOMMAIRE, *Antwerp*.
Sideboard, ornamented with mirrors, and made of rose and satin-wood.
- 419 ROULÉ, A. F., *Antwerp*.
Articles of furniture in ebony, tortoiseshell, rosewood, and oak.
- 420 JUDO, JEAN-BAPTISTE, *Berchem, Antwerp*.
Oak carved wardrobe, with four drawers, mouldings, and ornaments. Carved mahogany chair, with the back carved and ornamented. Carved walnut-tree chair. Light mahogany chair, with mouldings. All in the style of Louis XV. Common walnut-tree chair.
- 421 DERUELLE-DELEVOYE, FRANÇOIS, *Ghent*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Cylindric book-stand and writing-desk.
- 422 HOOGHSTOEL, LOUIS-FRANÇOIS, *Ghent*.
Antique wardrobe, in the Byzantine style.
- 423 GUISLAIN, CHARLES, *Hastière-la-Vaux, Namur*.
Marble slabs, for round tables, of various descriptions. Candelabras, in black marble.
- 424 SOETENS, CORNÉLIS, *St.-Gilles-lez-Brussels, Brabant*.
Artificial stone pillar and flags, for pavement. Artificial stone medallion. These specimens are made of fusible lava, by a new process.
- 425 LECLERCQ, AUGUSTIN, *Brussels*.
White and black Belgian marble chimney-pieces. Washing-stand, of foreign marble. Marble dressing-table. Mosaic square, composed of specimens of Belgian marble.
- 426 FOLLET, NARCISSE, *Ferrières*.
Stucco columns.
- 427 VANDEROOST, MICHEL, *Brussels*.
Specimens of patent leather boots. Goat-skin boots. Boot-trees. Patent and common lasts.
- 428 STAINIER, STANISLAS, *Brussels*.
Boot-trees, for the improvement of all descriptions of boots. Lasts of a new construction, and shoes made upon the same.
- 429 DOSIN, J. B., *Hermalle-sous-Argenteau, Liege*.
Tables and chairs, in platted willow.
- 430 LONCKE-HAEZE, CH. L., *Roulers*.
Brushes, for polishing, for clothes, for hair, dusting hats, sweeping, scrubbing, waxing, &c.
- 431 QUANONNE, C. & J., *Cureghem, Brabant*.
Specimens of stearic candles. Block of stearine.
- 432 ROBERT, P. J., jun., *Brussels*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Specimens of parasols and marquees.
- 433 DELSTANCHE & LEROY, *Molenbeek-St.-Jean, Brabant*.
Specimens of wax candles.
- 434 TOUCHE-GILLÈS, E., *St. Laurent, Antwerp*.
Specimens of soap, made of olive oil, tallow, hog's lard, and cocoa oil.
- 435 BRENTA, D., *Antwerp*.
Group of foreign and Belgian stuffed birds.
- 436 VAN CAMPENHOUDT, CH., & CO., *Heusden-lez-Gand, East Flanders*.
Specimens of stearine candles and oleic acid.
- 437 VANDER MAELEN, PH., *Molenbeek-St.-Jean, Brabant*.
An atlas, containing eight lithographs of the new topographical map of Belgium, prepared under the direction of Messrs. Gérard and Vander Maelen; scale 1 in 80,000.
- 438 CAPRONNIER, JEAN-BAPTISTE, *Brussels*.
Stained glass, with pictures in the antique style.
- 439 BEERNAERT, ANTOINE, *Brussels*.
Specimen of white stone, being part of that employed in building St. George's Church, Antwerp. Carved oak cabinet. This cabinet is represented in the cut on the next page.
- 440 MAGNÉE, FRANÇOIS, *Brussels*.
Specimens of pictures drawn by the pen.



A SCULPTURED MARBLE MANTEL-PIECE. BELGIUM.





40.

STATUE. M. LOUIS TIHOTTE, OF BRUSSELS.







Beernaert's Carved Oak Cabinet.

- 441 HART, L. J., *Brussels*.
A frame containing thirty-nine medallions in bronze, including portraits of the Duke of Orleans, the Queen of England, the King of the Belgians, &c.
- 442 WIENER, JACQUES, *Brussels*. (Agent, Mr. J. Hart, 31 Bevis Marks, City.)
Collection of twenty medallions, representing the principal monuments of Belgium.
- 443 DU CHASTEL, Count FERD., *Grimberghe, Brabant*.
Specimens of xylopyrography, or the new art of representing objects on wood by means of fire.
- 444 JAMAR, ALEXANDRE, *Brussels*.
Proof impressions of engravings on wood, from various works published by the exhibitor. Specimens of illustrated books, including "Histoire Belgique," in 2 vols., 8vo., with 250 engravings on wood.
- 445 DEVILLE-THIRY, —, *Liege*.
Specimens of painting on glass, by a new patent process, invented by the exhibitor, and called "vitrified Devilleo-type."
- 446 AVANZO, DOMINIQUE, *Liege*.
Lithographs, representing the Palace of Liege.

- 447 JÉHOTTE, CONSTANT, *Liege*.
Frame, containing fourteen bronze medallions of different sizes.
- 448 DAVELUY-D'ELHOUNGNE, —, *Bruges*.
Specimens of different kinds of lithography, such as crayon pencil drawing, pen drawing, hair-pencil drawing, chromolithographic drawing, &c. Specimens of playing cards, printed by a new patent process. Various other cards, ornamented and printed by novel processes.
- 449 ROSSEELS, EGIDE, *Louvain*.
Plan of an English garden.
- 450 GEERTS, CH., *Louvain*.
Various groups, carved in oak. Model of a pulpit, in plaster. Two of these groups are represented in the accompanying Plate.
- 451 GEEFS, JOSEPH, *Antwerp*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Statue in plaster: The Faithful Messenger.
- 452 VALERIUS-JOUAN, CHARLES, *Antwerp*.
Plan of the town of Antwerp, with the municipal divisions marked thereon.
- 453 VANHULLE, H. JEAN, *Rymenam, Antwerp*.
Plan for laying out a kitchen garden.
- 454 VAN HOOL, —, *Antwerp*.
Picture, in a palm-wood frame. Festoons and flowers in oak, for wainscoting.
- 455 DE CUYPER, LEONARD, *Antwerp*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
Marble statues: Canadian Woman lamenting her Child, and Moses in the Bulrushes.
- 456 TUERLINCKX, JOSEPH, *Mechlin*.
Marble statue: "The young shepherd Giotto attempting to draw."
- 457 JOOSTENS, GOMAR, *Essen-lez-Dixmude, West Flanders*.
Pinnacle, in Ordain stone, for the church of St. Nicholas, at Dixmude.
- 458 VAN DE MEERSCHÉ, CORNEILLE, *Alost*.
Piece of carved furniture, executed to commemorate the Exhibition of 1851.
- 459 JACQMMAIN, GUSTAVE, *Ghent*. (Agent, M. Cuyllits, 55 Gracechurch Street.)
A volume, painted, engraved, and printed, with flowered borders, in mediæval style, by Midolle, being an alphabetical collection of historical initial letters.
- 460 MARCHAND, ED., *Schaerbeek, Brabant*.
A marble bust, Madonna.
- 461 JAQUET, JOSEPH, *Schaerbeek, Brabant*.
Groups in bronze: The Deluge, Massacre of the Innocents, and The Death of Abel.
Statue in plaster: Cupid Disarmed.
- 462 JAQUET, jun., *Schaerbeek, Brabant*.
Plaster statue: The Top-player.
- 463 JÉHOTTE, L., *St.-Josse-ten-Noode, Brabant*.
Marble statue: Madonna. Plaster statue: Cain. statue is represented in the accompanying Plate 40. B. group: Child and Spaniel. Marble bas-relief: M. Dolorosa.

- 464 SIMONIS, EUGENE, *Koekelberg, Brabant.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Colossal equestrian statue in plaster: Godefroy of Bouillon. This statue is represented in the accompanying Plate, 81. Plaster statue: Truth.
Marble statuettes: The Happy Child, and The Unhappy Child. These statuettes are represented in the accompanying Plate, 238.
- 465 FRAIKIN, CH. AUG., *Schaerbeek, Brabant.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Plaster statues: Cupid Captive. Psyche imploring the assistance of Cupid, and Cupid in the Cradle.
Plaster statuette: Prayer.
- 466 GEEFS, GUILLAUME, *Schaerbeek, Brabant.*
Plaster group: The Lion in Love. This statue is represented in the annexed Plate, 234. Marble statuettes: Cupid and Group of Children.
- 467 MALLET, E. C., *Charleroi.*
Nails, called "Pointes de Paris."
- 468 KUMS, E., *Antwerp.*
Specimens of linens: Westphalia, Schierduck, Holland, Russias, Ravensdoek, &c.
- 469 GHISLAIN-DUBOIS, *Binche.*
Specimens of leather straps, or bands from cow-skin.
- 470 VERBERCKT, HIPPOLYTE, *Antwerp.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Silver vessel, vase and basket, in Gothic and antique styles.
- 471 MACKINTOSH, THÉODORE, *Brussels.*
Page-holder, for the printing composer, invented by the exhibitor.
- 472 WYNANTS, CORNEILLE, *Schaerbeek, Brabant.*
Machine for carving wood, marble, stone, &c., invented by the exhibitor.
- 473 MUQUARDT, C., *Brussels and Ghent.*
A volume containing specimens of various illustrated works.
- 474 POINT & SON, *Mouscron, West Flanders.*
Specimens of cast-iron kitchen ranges.
- 475 VANDERHECHT, E., *Brussels.*
Patent mining apparatus, called "Parachute des mines."
- 476 LUND, —, *Brussels.*
Patent regulating funnel.
- 477 BERTANI, ANTOINE, *Brussels.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
A mosaic table in straw, ornamented with nine Roman monuments.
- 478 BEMAND, RICHARD, *Courtrai.*
Specimens of parchment.
- 479 LECHERF, —, *Brussels.*
Bronze statuette: Rubens, after Geefs.
- 480 VAN HECKE, ANGE-THÉOPHILE, *Brussels.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Patent apparatus for ventilating mines, vessels, hospitals, barracks, prisons, theatres, factories, schools, churches, workshops, &c.
Patent ventilator, with alternating movement and constant effect, for railway carriages.
New method of recording the results of labour, by mechanical means.
New sounding-line and alarm-bell for vessels.
- 481 FELHOEN-BOUCKE, Widow, *Courtrai.*
Specimens of damasked and worked fabrics, and ticking.
- 482 HUBERT, ANTOINE, *Brussels.*
Specimens of chains and crosses, worked by hand and in gold.
- 483 SAPPRE, Widow, *Mouscron.*
Stuffs in cotton, wool and cotton, and linen.
- 484 PASTRYNS, —, *Louvain.*
Specimens of scarfs in Mechlin lace.
- 485 DE PAUW, *Ghent.*
Model of a moveable bridge, upon a new plan, being a combination of the fixed and swing bridges.
- 486 LANTHERE, F., & Co., *Ghent.*
Samples of flax-cards on combs.
- 487 BOBYNS, P., *Louvain.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Purified colza oil, of the best quality, for the use of the carcel-lamp. Purified lamp-oil.
- 488 BOONE, ALBERT J., *Alost.*
Leather for soles, harness, &c. Calf-skin. Varnished calf-skin. Leather for boot-legs, &c.
- 489 VAN GEETERUYEN, CASIMIR, *Hamme, East Flanders.*
Specimens of Indian wheat starch.
- 490 BROWNE, W. H., *Brussels.*
A terrestrial globe.
- 491 PLUYS, J. F., *Malines.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Historical church-window, forming a gallery of the ancient Dukes of Burgundy and Counts of Flanders.
Historical church-window, with figures, in the Byzantine style.
Panels, with coloured coats-of-arms. Panels, with coloured medallions of the seventeenth century.
Double entablature, ornamented with imitation medallions of different epochs, intended for an amateur cabinet.
Picture, after Rubens.
- 492 WOOD, WILLIAM, *Antwerp.*
Specimens of French merinos and white linen, manufactured by Hebbelynek, Ghent.
- 493 TIBERGHIES, L. J., *Binche.*
Large curried calf-skins, grey, cream-colour, and waxed. Strong boot-legs and fronts.
- 494 DUPIERRY, CH., jun., *Vielsalm, Luxembourg.*
Specimens of whetstones.
- 495 PONSEELE, EDOUARD, *Tournay.*
Specimens of wooden shoes of various kinds.
- 496 MERCKX, MATHIEU, *Kesseloo, Brabant.*
Specimens of winter barley and rye.
- 497 SCHEPPERS, FRANÇOIS, *Loth, Brabant.*
Combed wool, woollen yarn for warp and weft, woollen fabrics, light, plain, dyed and dressed.
- 498 BRICHAUT, —, *Schaerbeek, Brabant.* (Agent, M. Cuyllits, 55 Gracechurch Street.)
Bronze statuettes, monuments, &c.



81.

EQUESTRIAN STATUE OF GODFREY DE BOUILLON. M. SIMONIS, OF BRUSSELS.

11/11/11



234.

GROUP. M. CH. GEEFS. BELGIUM.



<p>IX, —, <i>Molenbeek-St.-Jean, Brabant.</i> rings for harps.</p>	<p>507 DANNEAU, D., <i>Neufvilles, Hainault.</i> Cylindric machine for cleansing corn.</p>
<p>E KONINCK, <i>Poperinghe, West Flanders.</i> hops.</p>	<p>508 VAN LOY, FRANÇOIS, <i>Antwerp.</i> A cask divided into five compartments.</p>
<p>NOGGERATH, Dr., <i>Brussels.</i> for introducing resinous vapours into the , through the nasal passages, or into the obstruction of those parts. rved scissors for the excision of the elon-</p>	<p>509 KESTEMONT, JEAN-BAPTISTE, <i>Brussels.</i> Patent brass suction and forcing-pump.</p>
<p>pplying compressed air in cases of simple he eustachian tube.</p>	<p>510 DELSTANCHE, PH., <i>Marbais, Brabant.</i> Patent articulated roller. A triangular weeding-plough. Double plough. Bra- bant plough with back harrow. Patent mole-trap. Patent straw-chopper. Oblique five-share weeding-machine, of two-horse power. A winnowing machine. Patent machine for cleaning grains and seeds.</p>
<p>BURKHOVEN, LOUIS, <i>Moerbeke, East Flanders.</i> Archimedeon screw, with double groove. n screw, with triple groove.</p>	<p>511 VAN DEN BRANDEN, J. A., <i>Mecklin. (Agent, M. Cuylits, 55 Gracechurch Street.)</i> Inlaid table.</p>
<p>RENKIN, —, sen., <i>Liege.</i> y guns and pistols, invented by the exhi-</p>	<p>512 VAN LINDEN PIERRE, 86 <i>Warwick Street, Pimlico.</i> Marble statue: Madonna. Sculptured marble vase. Subject from Spenser's "Fairy Queen." Four bas relievos: "Cupid trying his Bow." "Conqueror of Strength." "Fidelity the end of his occupation." Surmounted with "Cupid captive to Venus."</p>
<p>SACRÉ, E., <i>Brussels.</i> chemical analysis.</p>	
<p>IONDT BROTHERS, <i>Wandre, Liege.</i> coals.</p>	
<p>ROMBÉE, F., <i>Fléron, Liege.</i> coals.</p>	





NORTH AND SOUTH AREAS, A. B. 46 to 48; C. 43 to 53; D. E. 43 to 54; F. to J. 49 to 54; K. 48 to 54; L. to R. 46 to 54; Q. R. 77; S. 45 to 54; 72 to 77.
 SOUTH EAST CENTRAL GALLERY, M. 43 to 57; N. O. 43, 49.
 SOUTH EAST GALLERY, P. 43 to 58; 71 to 77.
 EAST END GALLERY, N. O. 77.

General Commissioner of the French Government in London, M. SALLANDROUZE DE LAMORNAÏX, 12 George Street, Hanover Square. Agents, LIGHTLY and SIMON, Fenwick's Street.

A VARIETY of circumstances contribute to render this collection, next to that of the United Kingdom, one of the most attractive and extensive in the Exhibition. The lengthened and successful experience enjoyed by France in exhibitions of national industry gave to the exhibitors an advantage not possessed by the majority of those contributing to the Exhibition, so far, that is to say, as concerned the arrangement and execution of the minor details inseparable from a display of this description. The results of these national expositions of French industry, and their effect upon the industrial progress of the people, and the development of art applied to the things of life, have been unquestionably great, and these are now presented to notice in a palpable form. The constant intercourse between this country and France, with the facility existing in both of the means of transport, seems to account, in some degree, for the large preponderance of French contributions on the Foreign side. But to this consideration must also be added others which have sensibly operated in giving an impetus to the contributors from France, but less strongly affecting those of other exhibiting States.

No class of the Exhibition, considered in its philosophical subdivision, has been left unrepresented by the French exhibitors. In Raw Materials, Machinery, Manufactures, and Fine Arts—the four grand Sections into which the thirty Classes resolve themselves—specimens of every variety are exhibited. The total number of exhibitors amount to about 1,750, and the area occupied by their contributed articles is very large, both on the north and south sides of the Main Eastern Avenue, and in the Galleries. It is to be regretted that some misconception originally existed with reference to this Catalogue, which was with difficulty removed, the result tending, in the first instance, to the production of a very condensed notice of the articles extending little beyond a mere enumeration of the objects. By much exertion, this obstacle to the production of a descriptive catalogue was eventually overcome, and although necessarily much condensed, and assuming, even in its present state, in many parts, the appearance of a summary notice of the objects, this Catalogue wears a very different aspect to that originally prepared. This cause has in some degree also delayed its appearance.

The principal features only of this large and valuable collection can be indicated in this notice. Among the Raw Materials, the beautiful specimens of raw and thrown silk must attract universal admiration. This is a department of industry which is constantly assuming greater importance. The samples of silk wound by modifications of the customary processes are of great beauty; and an interesting specimen of cocoons in the frames in which the silkworms are reared and permitted to spin the wonderful envelope of the pupa, gives a good idea of the manner in which the culture of these insects is carried on. The hemp, wool, and other textile materials exhibited are likewise interesting. The successful application of philosophy to manufacturing chemistry for a considerable time has produced good results in this department of industry. It is a universally admitted fact that, for some of the more delicate chemical preparations, such as vegetable alkaloids, the productions of the French manufacturer excel those of other nations. The grosser products are likewise exhibited: in these, however, the same success is not so manifest as in similar productions of British exhibitors, probably because the latter are generally manufactured on a very large and extensive scale. The cements and various specimens of paints exhibited have their special value and interest. Specimens of metals and of skill in metallic manipulation are also shown,—in particular, some large specimens of beaten copper and rolled brass, and specimens illustrative of the iron manufactures. Articles of prepared food are also largely exhibited.

A good collection of Machinery is likewise shown. It includes, among many objects of interest, a large prime mover in the form of a turbine water-wheel, a mechanical contrivance for the development of power

from the descent of water, of recent introduction, and already of extensive application to the cotton and silk factories of France, and to other mills. The power developed by the fluid in motion is very great, and the arrangement of the machine extremely compact and effective. The mules for cotton-spinning, the carding engines for cotton and wool, and the endless paper-making machines, form objects of instructive comparison with the magnificent display of similar machines in the British collection. The kitchen apparatus, boilers, and numerous other machines are likewise of an instructive character. The philosophical instruments and musical instruments, inclusive of the organ in the Nave, form also an interesting group of objects. Optical instruments of different kinds are exhibited in great perfection.

Among the Manufactures, attention cannot fail to be claimed by the gorgeous productions of the silk-loom of Lyons, which are arranged in cases in the Gallery. The cotton manufactures, and those of wool and linen, are not less interesting. Wherever these admit of the introduction of a design, even in the commonest articles, there the peculiar and graceful indications of artistic feeling, which render the patterns produced popular, even among those who may not be able to recognise the cause of their harmony, are manifest. The skilful arrangement of many of these articles adds much to their attractiveness in the Exhibition. The splendid tapestries of the Gobelins, and of other national manufactories, as that at Beauvais, form, perhaps, one of the most interesting features of the whole collection. They are accompanied by specimens also of Sevres porcelain, the articles in which, inclusive of vases, paintings, &c., are of great rarity and costliness. The furniture exhibited partakes of the usual character of the French productions of this class, and many indicate the employment of talent of a high order in their design and execution.

This collection is extremely rich in those articles which form so large and important a feature in Parisian industry—articles of bijouterie, vertu, &c., and jewellery. The multitude of objects exhibited in this class, and their variety, strongly suggest the idea of a great demand for such elegances, and of the existence of many skilful designers occupied in their production. The beautiful display of jewels exhibited by Her Majesty the Queen of Spain, and the jeweller of that Court, attract universal notice. The specimens of paper and printing exhibited include a number of objects of interest; and the coloured and other lithographs, and stereotypes by new processes, evidence much progress in this department. Photographs on paper and on silver (Talbotype and Daguerreotype) are exhibited, and form a very interesting collection. The French photographers have made great progress in the art of the Talbotype (an English discovery), and beautiful pictures taken by modifications of that process are shown. Those taken on glass plates, of which the positive pictures or proofs only are shown are, in some instances, taken by a process largely employed to obtain photographs for the Royal Commissioners in illustration of the Juries' Reports. Objects of sculpture and of the fine arts are likewise exhibited, and add to the interest of the collection.

The whole collection forms a fit illustration, and also an adequate one, of the present state of the industry of France; and it is interesting to regard it, also, as in some degree offering an exemplification of the effect of exhibitions of industrial products upon the nature and quality of the articles produced. The excellence and abundance of the objects of minute art would appear to indicate a high state of refinement; but their perfection forms, however, an observable contrast to the state of articles of a more ordinary character, and extensive demand. Although much has been done in the improvement of these articles, they do not admit of comparison with the perfect execution and manufacturing skill displayed in those of a more costly description. That improvement in the manufacture of these commoner articles of life, which is now rapidly extending in France, may be in part attributable to the powerful encouragement to the production of this class of objects constantly offered at the National Expositions at Paris.—R. E.

1 ADOLPHE, CHARLES, *Mulhouse (Haut-Rhin)*—Manufacturer. (Agent, Mr. GUEBIN, 8 *Rue de la Bourse, Paris*.)

Pieces of silk and woollen damask, wrought by Jacquard looms.

2 AGOMBART, P., *St. Quentin (Aisne)*—Manufacturer.

Hydraulic lime reduced to powder by a patent process; suitable for water-works, for inside and outside coatings, and for building purposes.

3 ALBOY, L. N., *Bois-Milon, Setz (Oise)*—Manufacturer.

Specimen of a plough of peculiar construction, and other agricultural machinery.

4 ALCAN & LOCATELLI, 28 *Rue d'Enghien, Paris*—Civil Engineers. (Agent M. KOEBER, 11 *Queen Street, Golden Square*.)

Various files, manufactured by a new process on the principle of hardening the teeth at the same time that they are cut; patented in France, England, Belgium, and Germany. The French patent is worked by an operative association established in Paris, *Rue Philippeaux, Passage de la Marmite*.

5 ALCAN & LIMES, 28 *Rue d'Enghien, Paris*—Civil Engineers. (Agent M. KOEBER, 11 *Queen Street, Golden Square*.)

Specimens of dyed and undyed raw silk. Cold-water

spun silk. Ungummed and dyed raw organzines. Silk spun from Calcutta cocoons. The samples exhibited are said to be produced by such a simple process and machinery, that after a few hours' practice a person unacquainted with silk spinning will be enabled to spin perfectly. Skeins of silk produced by the old and by the new process.

6 ALLIX, ANDRÉ JULIEN, 41 *Rue Montmartre, Paris*—Wax Modeller.

Figures for hair-dressers. Stays and fancy articles.

7 ANGRAND, ALF., 59 *Rue Meslay, Paris*—Manufacturer.

Specimens of borders in gilt and coloured papers; the bands are for ornamenting bales of linen; the large-sized gilt borders, which can be made a yard long, are used for the frames of mirrors, or for ornamenting apartments.

Specimens of paper for the tops of embossed boxes, and for the covers of books.

Specimens of fancy papers, and various specimens of card-board, for the manufacture of boxes for confectioners and perfumers; likewise paper called "cosaques," used for wrapping sweetmeats; and bands of silver lace-paper, for binding cakes in England and Scotland.

The following is the list of the fancy papers:—1. Gilt and silvered, plain and satin, engraved, figured and laced. 2. Porcelain-paper, figured, printed, painted, and gilt; every kind of ornamental paper used in binding, framing,

for fans, boxes for perfumers, gloves, confectioners, &c. In the last century all these papers were unknown; marbled and plain papers being only known, in which England and Bavaria have long excelled. Since 1810, fancy paper-making has become an important industrial employment in Paris.

8 ARDUIN & CHANCEL, *Briançon (Hautes-Alpes), Post Office—Manufacturers.*

White spun silk; produced by the preparation and the carding of waste occasioned in spinning and throwing silk.

9 ARRAULT, —, *96 Rue St. Denis, Paris—Manufacturer.*

Fancy papers. Plate ornaments, and shades made of lace-paper.

10 ANDREOLETTI & SON, *St. Lo (Manche), and 167 Drury Lane—Machinists and Builders.*

Twenty-three models of different apparatus for cooking, distillation, bakehouses, &c.

11 AUDOT, E. J., *Manufactory and Depot, 81 Rue Richelieu, Paris—Manufacturer.*

Dressing and travelling-cases of every description, arranged with a view to economy of space, and completely fitted. Gentlemen's dressing-cases of the finest woods, inlaid with marquetry, and chased silver mountings; with highly finished steel, ivory, and tortoiseshell fittings. Lady's dressing case with five secret drawers, inlaid with marquetry, fitted with thirty-five pieces in crystal, silver mounted and engraved. Silver wash-hand service. Toilet mirror in ebony, ornamented in silver, chased and embossed. Ewer, cut crystal, solid silver mountings. Vessel for perfumes, solid silver, antique forms, chased and embossed by a new process.

12 AUGAN, MARCELIN, *10 Rue de Latour d'Auvergne, Paris—Manufacturer.*

Gommeline (artificial gum Arabic), made by a new process, intended as a substitute for gum Arabic for all manufacturing purposes.

13 AUZOUX, LOUIS, M.D., *1 Rue de l'Observance, Place de l'Ecole de Médecine, Paris—Inventor.*

Artificial models, showing, in the most minute details, the organization of all species of beings. A horse (about 4 feet high). This presents the complete anatomy, comprising more than 3,000 minutiae, and taking into 200 pieces. The same, showing on one side the muscles, nerves, and vessels of the superficial layer; on the other side, the muscles, nerves, and vessels of the middle layer, and all the organs in their respective cavities. Thirty *maxille*, or jaws, displaying correctly the age of the horse at every period of life. Affections of bone in the horse, showing, from the commencement to their full development, the diseases known under the name of splints, spavins, &c. The foot of the horse, showing the disposition of the hoof, of the "podophilous" tissue, of the vessels and nerves, &c.

The complete model of the human body, of life size and composed of 130 parts, which may be detached, exhibiting upwards of 1,700 objects, comprising minute vessels, the muscles, nerves, arteries, &c. A model of a man (3 feet and a half high), consisting of the same number of pieces as the large model. Two models (2 feet and a half high), offering all the necessary details for the medical practitioner. For the lymphatic vessels, the large model of the human body (5 feet 9 inches high), representing on one side all the superficial veins,—on the other, the bones, with the complete vascular net-work of arteries and veins, from the heart to their minutest ramifications, with the nervous ganglia, and lymphatic vessels. Model for the lymphatic vessels (3 feet and a half high), arranged in the same manner as in the large one.

Two models for teaching physiology in colleges, and other establishments (one 6 feet 9 inches high, the other 3 feet and a half), representing on one side the muscles

and vessels of the superficial layer, on the other, only the muscles and nerves of the inner layer, besides the organs contained in the splanchnic cavities, embracing the same divisions and details as the complete model. A model, exhibiting all the muscles and vessels of the superficial layer and the organs of the chest and abdomen, each organ admitting of being displaced separately, with the muscles, vessels, and nerves. Several models of the fetus in various states.

The cerebellum and spinal marrow, with the origin of all the spinal nerves. The cerebrum, cerebellum, and medulla oblongata, without the vessels, for the study of the nervous system in man, and the vertebrata. In this preparation the medullary fibres of the medulla oblongata can be followed from their origin to their termination, each part of the encephalon, admitting of being removed.

The eye, greatly enlarged, with a part of the orbit, the muscles, the vessels, the nerves, the membranes, the vitreous humour, the crystalline lens, &c. The eye, divided in its whole extent by a vertical section. The temporal bone (2 feet long), showing the internal, the middle, and the external ear, in its most minute divisions; the expansion of the auditory nerve, the soft part of the labyrinth, &c. The temporal bone (half the size of the preceding) showing the ear in the same manner as in the larger one. A similar preparation, greatly enlarged, showing the organ of hearing in birds, and in fishes.

Vertical section of the head, greatly magnified, showing the base of the skull, with the eye, ear, nasal fossae, mouth, pharynx, larynx, and the muscles, vessels, and nerves, in all their subdivisions. A larynx, greatly enlarged, with its muscles, arteries, and nerves.

The *Melonta Vulgaris*, or cockchafer, magnified 12 times, with the muscles, nerves, and viscera. It can be taken into many pieces, exhibiting more than 600 parts in detail. The *Helix Pomatia*, or snail, greatly enlarged (2 feet in length), showing, in all their minute details, the muscles, vessels, nerves, and viscera. The *Hirudo Medicinalis*, or leech (2 feet in length), exhibiting the blood vessels, nerves, digestive tube, muscles, &c.

A collection of models, for the explanation of the principal functions in the animal kingdom, mammifera, birds, reptiles, fishes, mollusca, insecta, and radiata, viz.:—Digestion, circulation, innervation, respiration.

The *Bombyx Sericaria*, or silkworm, considerably enlarged, (about 2 and a half feet in length); the complete anatomy, alimentary canal, muscles, nerves, trachea, &c., showing the apparatus for the formation of the silk.

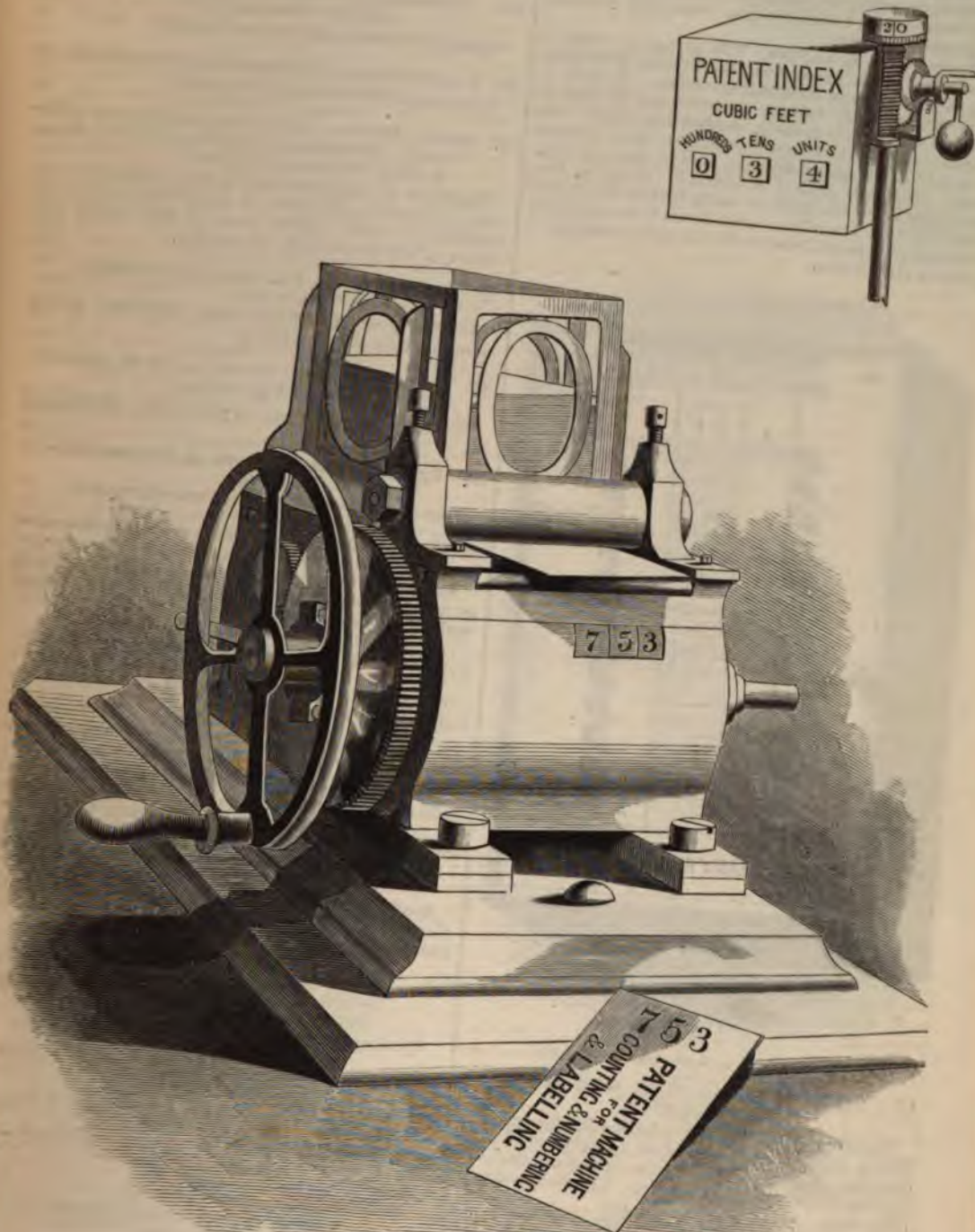
All the corresponding parts of these solid preparations can be adjusted to form a complete animal, and may be connected and disconnected with the greatest facility. They may be used with great advantage in anatomical studies in every country, and at all seasons, being free from anything that might annoy the senses.

14 ARMENGAUD, —, sen., *Conservatoire des Arts et Métiers, Paris—Professor.*

Designs for manufacturers. Popular works relative to machinery, tools, and apparatus, both French and foreign, in seven volumes, with atlas.

15 BARANOWSKI, JOSEPH JEAN, *3 Rue de Parme, Paris—Inventor and Manufacturer.* (Agent, W. LUND, 24 Fleet Street.)

A portable machine for printing, numbering, and registering tickets for railways, theatres, balls, &c., at the rate of 5,000 per hour. A number of blank cards are placed in the upper part of the machine, and then, by turning the handle, either by the hand or by steam power, the cards are delivered, one by one, ready for distribution, that is, printed from an adopted form, and numbered from 1 to 2,000, 3,000, or upwards. At the same time each ticket is registered as it leaves the machine. The printing, as well as the numbering, is done with common type in different colours; the model exhibited prints in red and blue. Each ticket is further checked by marks or symbols, which



Baranowski's Patent Machine for Counting, Numbering, and Labelling.

may be transposed, to increase the difficulty of imitation or fraud. This machine is represented in the illustration on the preceding page.

Gas meter index, and ballot box, illustrating two other applications of the same invention. This index is shown in the preceding page.

Ready reckoning machine. This apparatus, which is represented in the annexed cut, is applicable to all banking, commercial, and industrial operations. To work it, it is only necessary to turn a handle, and to push or displace one or more buttons, numbered by series. The products sought after appear immediately. These products cannot be questioned or disputed, because they are calculations made and checked beforehand. Moreover, they are controlled by the numbers on the buttons which have been displaced. One of the models shown is for calculating workmen's wages, and another for the rates of carriage of goods or merchandize.



Baranowski's Patent Ready-reckoning Machine.

- 16 BARRALLON & BROSSARD, *St. Etienne (Loire)*—Manufacturers.

Specimens of shaded and printed silks for parasols. Patent embroidered ribbons, dyed and printed after the weaving. A great variety of silks exhibited, principally for their bright colours and shades. Various qualities of plain satin.

The ribbons are manufactured from the raw silk, and are dyed and printed after the weaving. The manufacture of plain ribbons has been much improved by an improved machine, by which several pieces of embroidered ribbon are executed at once, whereas by the old hand-machine only one piece could be made at a time.

- 17 BAHUET, A., *Beaumont (Marne)*—Manufacturer.
Specimens of unbleached and dyed merino fabrics.

- 18 BAJELAIRE, EDOUARD, *Moirans (Isère)*—Ribbon Manufacturer.

Satin and taffeta ribbons, woven by machinery in a water-mill.

- 19 BARBEAUX-LÉCUYER, J. LOUIS, *Bazancourt (Marne)*—Manufacturer.

Specimens of unbleached and dyed merino.

- 20 BARRÉ-RUSSIN, —, *Orchamps (Jura)*—Manufacturer.
Specimens of hard chinaware, fireproof.

- 21 BARTH, MASSING, & PLICHON, *Sarrequevine (Moselle)*—Manufacturers. (Agents, I. S. DE GAETAN & Co., 3 Bow Lane, Cheapside.)

Specimens of silk plush, used in the manufacture of hats; exhibited for superiority of colour. The exhibitors manufacture about 140,000 yards of this article per annum, of which two-thirds are exported.

- 22 BATHIER, VICTOR, *à la Souterraine (Creuse)*—Bootmaker.

Wooden shoes of different shapes and sizes, a new invention, made for exportation.

- 23 BEGUIN, ANTOINE, 6 *Rue du Marché, St. Honoré, Paris*—Manufacturer.

Velvet pasteboard. Common pasteboard. Stationery, &c.

- 24 BENCRAFT, STEPHEN, 36 *Rue de Ponthieu, Paris*—Saddler.

Specimens of harness, saddles, horse-collars, &c.

- 25 BERGER-WALTER, —, 27 *Rue de Paradis Poissonnière, Paris*—Manufacturer.

Spectacle glasses. Crystal knobs mounted in glass or in metal, for door handles; the produce of the glass works at St. Louis (Moselle).

- 26 BILLECOQ, A., 25 *Boulevard Poissonnière, Paris*—Manufacturer.

Embroidered cashmere shawls and scarfs. Cashmere and crape fabrics.

- 27 BLANCHER, J. B., *St. Just-en-Chaussée (Oise)*, and 14 *Rue des Mauvaises Paroles, Paris*—Manufacturer.

Specimens of plain and embroidered net-work; and plain and fancy silk stockings.

- 28 BLANZY, POURE, & Co., *Boulogne-sur-Mer*—Manufacturers. (Agents in London, J. S. DE GAETAN & Co., 3 Bow Lane, Cheapside.)

Specimens of steel pens of various descriptions. Of these articles, 20,000 gross per week are produced at the manufactory of the exhibitors.

- 29 BLECH, STEINBACH, & MANTZ, *Mulhouse (Haut-Rhin)*, and 37 *Rue de Sentier, Paris*—Manufacturers.

Specimens of printed cotton goods, for exportation.

- 30 BLERHOT & LEMAITRE, 81 *Rue de Cléry, Paris*—Manufacturers.

A piece of lawn kerchiefs and several pieces of linen.

- 31 ROBERT-BOILEAU, —, *Pontfaverger (Marne)*—Manufacturer.

Pieces of unbleached merino.

- 32 BONIFACE & SONS, *Cambray (Nord)*—Manufacturers.

Specimens of linen fabrics, cambric, and lawn.

- 33 BONTE, LOUIS, *Roubaix (Nord)*—Manufacturer.

Assortment of mixed fabrics of wool and cotton for trousers.



- 34 **BOUCHEZ-POTHIER**, —, *Warmeriville (Marne)*—
Manufacturer.
Dyed and unbleached merino fabrics.
- 35 **BOYER, sen., & LACOUR BROTHERS**, *Limoges (Haute-Vienne)*—Manufacturers.
Specimens of flannels and druggets. These goods are spun, dyed, and woven by the exhibitors.
- 36 **BRÉAUTÉ, E.**, 11 *Rue de la Monnaie, Paris*—
Manufacturer.
Aquarelle card paper, and embossed cards for drawings and frames.
- 37 **BRUN, AUGUSTE**, *Grenoble (Isère)*—Manufacturer.
Machine for cutting out gloves. Specimens of kid gloves in process of manufacture. Dressed leathers.
- 38 **BRUENEAUX & SONS**, *Rethel (Ardennes)*—Manufacturers & Machine Makers. (Agents in London J. S. DE GAETAN, 3 *Bow Lane, Cheapside*.)
Woolen yarns of various kinds, manufactured on a machine constructed by the exhibitors.
- 39 **BURGUN, WALTER, BERGER, & Co.**, *Gützenbruck (Moselle)*, 27 *Rue Paradis, faubourg Poissonnière, Paris*, and 21 *Hatton Garden, London*—Manufacturers.
Specimens of watch-glasses of all descriptions. The exhibitors manufacture about 90,000 per day.
- 40 **BARRERE, BENJAMIN**, from **LEMERCIER'S**, 62 *Rue Mazarine, Paris*—Engineer and Engraver.
Specimens produced by four new engraving and carving machines. These specimens consist of vignettes of microscopical fineness of execution for the prevention of forgery. Various specimens of intricate combinations of curved lines, and specimens of engraving in cornelian, being portraits of Her Majesty Queen Victoria, &c. This process is especially adapted for banking and mercantile houses, and for the purpose of mechanical reproduction of various models and medals, copied from embossings.
- 41 **BARRÈS BROTHERS**, *St. Julien en St. Alban (Ardèche)*—Producers.
Specimens of cocoon and silk winding. Organzine, for manufacturing silk fabrics, plush, satin, figured, and plain ribbons.
- 42 **BATAILLE, VICTOR**, *Blangy-sur-Brest (Seine-Inférieure)*—Manufacturer.
Pyroligneous and other acids. Chemical productions used in manufactures, principally for dyeing and printing various fabrics.
- 43 **BAUDON**, —, 6 *Rue Neuve-St.-Laurent, Paris*—
Wood-stainer.
Specimens of black-wood in veneers and block, and of veneers of various colours, for fancy joiners' work, dressing-boxes, liquor-cases, &c.
- 44 **BAUDOIN, ANTOINE PIERRE**, 12 *Rue de Socrate, Rouen*, and 74 *Rue Richelieu, Paris*—Producer.
Specimen of the application of enamel painting; a new preservative principle for the inside and outside of buildings.
- 45 **DE BAY**, —, 5 *Passage Colbert, Rotonde, Paris*—
Statuary.
Artificial stone, statues, and ornaments. Patent baked clay, capable of resisting all variations of the weather.
A statue of Eve and her children. This statue is represented in the accompanying Plate, 176.
- 46 **DE BEAUFONT**, —, 28 *Rue de Bourgogne, Paris*—
Inventor.
An artificial foot, applicable in all cases of amputation above and below the knee, and of both legs.
The use of this artificial foot has been introduced into the military hospitals in France.
- 47 **DE BRAUVOYS, CH.**, *Seiches (Maine and Loire)*—
Surgeon.
Beehives and apparatus for apicultural purposes, or for rearing bees.
- 48 **BÉCHOT, jun.**, 3 *Rue du Pont-Louis-Philippe, Paris*—Manufacturer.
A peculiar description of travelling clocks.
- 49 **BÉGOU BROTHERS**, 6 *Impasse des Argentiers, Bordeaux*—Manufacturers.
Nutritious pastes: macaroni, vermicelli, riband vermicelli, and stamped. These pastes are transparent, dry and brittle. They are manufactured from the best wheat. They can be preserved throughout a long voyage without deterioration.
Granulous gluten: extracted from wheat. It is cheap and is recommended for invalids. Being well dried, it can be preserved for an indefinite period, and thus becomes an excellent substitute for biscuits on board ship.
Vegetable meal: flour of peas, beans, lentils, French beans, and of British groats. These are dried, pulverized, and prepared with great care. They can be well preserved, and are very economical: in ten minutes, with a small fire, they are cooked without altering their flavour.
Cream of rice: extracted from Carolina rice, and prepared so as to keep in the hottest climates. It is used in making custards, and is also a delicate nourishment for infants.
Flour of starch, extracted from wheat. This starch is extremely white, and has combined with it many other bodies, which render it an excellent starching substance.
- 50 **BELVALETTE BROTHERS**, *Boulogne-sur-Mer (Pas-de-Calais)*, and 24 *Avenue des Champs Elysées*—
Coachmakers.
Hunting and other carriages made on the English plan.
- 51 **BÉBARD & Co.**, 44 *Rue Blanche, Paris*—
Manufacturers.
Small purified coals and residue of the same. The produce of a system for purifying coals, patented in France, England, Belgium, and Germany.
- 52 **BERLINER, ARNAULD**, 4 *Rue de Provence, Paris*—
Professor of Calligraphy.
A large calligraphic picture, a yard and a half long, and a yard broad. The subject of the penmanship is the speech made by Mr. Dupin, President of the National Assembly, on the death of Sir Robert Peel. Annexed are some acts of the great statesman. The style is Milesian; and the whole is written in English as well as in French.
A small ebony piece of furniture, with ornaments on wood; executed with pen and ink. Each compartment contains subjects of a religious kind, embellished with flourishes and curious ornaments, executed in the mediæval style on wood and vellum.
The calligraphic picture was executed chiefly with a common pen. The greatest care has been taken to adopt the style of writing to the subject, and to make it truly an historical monument. The portrait of the statesman is represented through the medium of dotted flourishes; and the French and English allegories, as well as the writing itself, point out his memorable words and deeds. The writing is executed, either on wood or vellum, with indelible ink invented by the exhibitor.
- 53 **BERLIOZ, F., & Co.**, 16 *Rue de la Douane, Paris*—
Manufacturers.
Silvered plate glasses, with gilt and carved frames.
Unsilvered plate glasses.
These plate glasses are exhibited for the purity and whiteness of their shade, and the regularity of their surface.

- 54 BERR & Co., 17 Rue de Clery, Paris—Manufacturers.
(Agents, GRAETZER & HERMAN, 3 Huggin Lane,
Wood Street, Cheapside.)

Various specimens of embroidery on net and muslin.

- 55 BERRUS BROTHERS, 73 Rue Montmartre, Paris—
Producers.

Various designs for cashmere shawls.

- 56 BERTHAULT, —, Issoudun (Indre)—Manufacturer.

Parchments of various sorts for bookbinding, boxes,
sheaths, printings, &c.

- 57 BERTHIOT, —, 5 Rue Ohlia, Paris—Currier.

Specimens of Paris and Milan leather of a superior
quality.

- 58 BERTONNET, —, 56 Passage Choiseul, Paris—
Manufacturer.

Three guns to show their different stages of manu-
facture. Three guns, showing the same in a different
style. A dark brown barrelled gun, mounted with plat-
inum. A swivel gun chased and engraved.

A pistol for saloon practice, engraved. Two pistols for
saloon practice. A hunting-knife, with dark brown steel
handle. A gun adapted for various purposes.

A brace of pistols of improved construction, one of
which exhibits the process of manufacture, with boxes
and apparatus. A brace of pistols with box. A swivel
gun, inlaid in gold, with ebony stock. A gun, with
ebony stock, polished and engraved. A gun, engraved in
the style of Louis XV. A gun constructed for the use of
a person deprived of the right eye. Four guns. A hunt-
ing-knife, with handle of green ivory, sheath, &c., engraved
and inlaid in gold. Gun-barrel hinged.

- 59 BERTRAND, FRANÇOIS, & Co., Ganges (Hérault)—
Inventors.

Fishing-net, for sea-fishing, made by patent machinery
with a single thread. Exhibited for simplicity of me-
chanism and economy of workmanship.

- 60 BESCHER, RIGOMER FRANÇOIS, 2 Rue Guénégaud,
Hôtel des Monnaies, Paris—Inventor.

Patent musical compositor. Apparatus of demonstra-
tion, representing the musical scale in relation with a
pianoforte key-board.

In works on musical composition, the extent and dura-
tion of sound, as also their fractional equivalents, are
generally represented by conventional signs. The musical
compositor is intended to render the comparison of these
conventional signs more obvious, and to be a means of
producing every possible combination, whether simple or
compound. It is an instrument for facilitating the ex-
planation of the principles laid down in the different
methods extant.

The extent or division of sound, from grave to acute, is
represented on the musical compositor by a finger-board
composed of musical keys, which correspond alternately
with the lines and spaces placed in juxta-position, and
which take the names of the respective keys. These lines
and spaces form the musical scale of which they represent
the degrees; and these degrees are disposed so as to re-
ceive the keys and staves which serve to mark the division
of the scale. In explaining the connection which exists
between the keys, the distance from one sound to another,
and its inversion, the alteration of notes, the formation of
chromatic and diatonic scales, in the major or minor
modes—in short, everything which refers to the division
of sound from grave to acute—the moveable key-board,
placed in juxta-position with the musical scale, will be of
great utility, having the advantage over the key-board of
an ordinary piano-forte, of presenting to the eye the whole
of the exercise, whilst the keys were being pushed forward;
and remaining in that state, the number of tones or demi-
tones which separate each of the degrees may easily be

calculated, and thus by analogy the formation of the same
exercise in another key may be facilitated.

The duration of sound consists in placing, from left to
right, on the lines, or in the spaces of the staves, and in a
prescribed space called a measure, one or more signs called
notes, representing by their relative value the number and
duration of the sounds to be produced in a specified
interval of time. In noting music with the compositor,
paper is replaced by moveable staves, which are placed on
the musical scale in juxta-position with the key-board.
In like manner the pencil or pen is replaced by notes cut
in metal, representing every variety of musical value.
These notes are contrived so that they may be fixed on
the lines or in the spaces of the staves. The musical
notes being thus represented, the touch comes to the
assistance of the memory and judgment, and as the com-
parison becomes more obvious, the notes are more easily
distinguished from one another, and the possibility of
composing and recomposing the bars, in passing pro-
gressively from a full note to its smallest fractions, is
readily understood.

- 61 BERNARD, RICHOUX, & GENEST, Angers (Maine
and Loire).

Various specimens of hemp ropes and cords of all sorts,
for marine, fishing, packing, and for all other manu-
facturing and commercial purposes.

- 62 BIBER, L., 32 Rue Hautefeuille, Paris—Inventor.
Patent clyso-irrigator, or clyso-syphon.

- 63 BONDON, LOUIS, 5 Rue Grange-aux-Belles, Impasse
Ste. Opportune, Paris—Manufacturer.

White and coloured porcelain papers and cards. Stucco-
paper and cards of various colours; damask papers;
gelatina, rendered impermeable, for boardings and print-
ings of all descriptions, but chiefly polychromography.

- 64 BONNASSIEUX, —, 57 Rue du Cherche-Midi,
Paris—Sculptor.

Cupid cutting off his wings: a figure in bronze, by
Messrs. Eck & Durand, Founders, Paris.

- 65 BLANK, J. D., 20 Rue du Roi de Sicile, Paris—
Inventor.

Specimens of marquetry and of mosaics in imitation
of ivory and tortoiseshell.

- 66 BLANVIN, —, 7 Rue des Enfants Rouge, Paris—
Manufacturer.

Specimens of round metal mirrors, with stands; em-
bossed frames, with engravings, &c.

- 67 BOURDALOUE, —, Resident Engineer of the Rail-
way du Gard, Bourges (Cher)—Inventor.

Plan of a double self-acting railway, executed in 1844,
by M. Bourdaloue, Resident Engineer of the Gard Rail-
ways. By this plan the descent of the wagons, loaded
with coal, is made to draw the empty wagons to their
starting point from the coal-mine. By this arrangement
20 horses and eight hands were no more required, and the
carriage of the coals was reduced from 2s. 6d. per ton to
3d. From 500 to 600 tons are thus carried away daily.
The loaded wagons coming out of the mine are impelled
by their gravity along the railway. By this diminished
gravity, due to the weight of three wagons of coals on the
incline, they raise simultaneously three empty wagons
from the bottom of the mine shaft.

- 68 BOAS BROTHERS & Co., 4 Rue Vide-gousset,
Paris—Manufacturers.

Brocaded cachmere and worsted shawls.

- 69 BOYER, P. J., Dôle Jura—Watch-maker.

Watches not requiring winding up for eight days and
for thirty-two days (a patented invention).

BOYER, V.P., 38 *Rue Saintonge au Marais, Paris*
—Manufacturer.

ious bronze articles:—Clocks, candelabras, statuettes, lustres, and art bronzes.

BOYER & Co., 33 *Rue de la Harpe, Paris*—
Manufacturers.

umen of blood, called *Albuminous serum*. (Patented since.) This albumen is intended as a substitute for white of eggs in all its applications, especially for use on stuffs, clearing wines, &c.

BRAUN, CHARLES, 34 *Boulevard Bonne Nouvelle, Paris*—Designer.

signs for fabrics manufactured by several Paris and in houses. Fancy designs. Designs for ribbons, by Vignat Brothers, of St. Etienne. Large designs for fabrics.

BREDIF BROTHERS, Tours. Dépôt, 3 *Rue Casmartin, Paris*—Manufacturers.

ets, shoes, &c., with improved seams.

BROCCHIERI, PIERRE, 21 *Rue Louis-le-Grand, Paris*—Inventor.

concentrated forms of food prepared from the blood of

is blood which has served as the subject of the experiments and preparations, is that of the Mammalian class, in which, as in other "red-blooded" animals consists of a colourless fluid called "plasma" or "serum," and of minute particles—most of which are called "blood discs," the rest white, called "leucocytes." When blood is drawn from the animal and left at rest it "coagulates," that act consisting in the solidification of one of the constituents of the blood, called the "fibrine," with which the blood-discs are entangled, forming the red "clot;" another constituent of the plasma, called the "serum," remains

A great proportion of the plasma consists of water. It also contains various fatty matters and phosphorus, and the following inorganic salts, in their proportions in parts:—

Chloride of sodium	3.6
Chloride of potassium	0.36
Tribasic phosphate of soda	0.2
Carbonate of soda	0.84
Sulphate of soda	0.28
Phosphates of lime and magnesia	0.25
Oxide and phosphate of iron5—R. O.]

BRUNIER, LENORMAND, & Co., 55 *Rue Vivienne, Paris*—Manufacturers.
Cosmetic vinegar (called *Cosmaceti*), for toilet purposes.

BRUNIER, —, 55 *Rue Vivienne, Paris*—Inventor.
Specimens of a new process of gilding upon copper so as to preserve the colour.

BUDIN, R. A., 50 *Rue du Fer-à-Moulin, Paris*—
Manufacturer.

anned and curried horse hides: especially used for topes and upper leather.

BUDIN-SIGNEZ, —, *Beauvais (Oise)*—Manufacturer.
(Agent, I. S. DE GAETAN, 3 *Bow Lane, Cheapside*.)
oven felts of all sizes, adapted for continuous manufacture for the manufacture of pasteboard and paper. Sets of various colours. Light cloth for China.

BURAT BROTHERS, 12 *Rue Mandar, Paris*—Inventor.
uses on a new principle, with eccentric pivot, weigh upon all parts of the cushion.

80 CAILLAUX, ALEXANDRE, Madame, 16 *Passage du Saumon, Paris*—Inventor.

White satin stays. Mohair stays, with patent mechanical busk.

81 CABRIT & ROUX, St. André de Valborgne (Gard)—
Silk-Reelers. (Agents in Paris, M.M. A. GERMINE & Co., 30 *Rue de l'Echiquier*. In London, FORDATI, COXHEAD, & Co., 13 *Old Jewry Chambers*.)

Raw silks: fixed cocoons, white and yellow. The produce of a spinning-mill of sixty frames.

82 CAILLET, FRANGUEVILLE, Bazancourt (Marne)—
Manufacturer,

Specimens of unbleached and dyed merinos.

83 CASTEL, EMILE, Aubusson (Creuse)—Manufacturer,
Door-curtains, Aubusson fabrics, and in the Gobelin style. Panels of the same description. Sofas and table-covers, and rugs.

84 CERF & NAXARA, 17 Rue St Rémy, Bordeaux (Gironde)—Manufacturers.

Fine paste-board work for holding dried fruits and wedding-presents; toilet and perfume boxes, &c., for home trade and for exportation.

85 CHARTIER, P., *Douai, Nord*—Manufacturers.

Glass demijohns, enclosed in white wicker (for exportation).

86 CHATELAIN & FORON, Rheims (Marne)—
Manufacturers.

Bolivart flannel. Cloaks. Sultana cloths. Zephyr cloths.

87 CHENARD BROTHERS, Rue du Puits-au-Marais, Paris
—Hat Manufacturers. (Agent, Mr. P. DUPEBRIEU, 17 *Bridge Street, Southwark*.)

Hats made of beaver, musquash, and hare skins. Specimens of beaver and musquash felt for waistcoats.

88 CHEROT & Co., *Nantes (Loire Inférieure)*—
Manufacturers.

Specimens of threads, cloths, and cordings, of Loire hemp. Drawings of a spinning-machine, and a machine for manufacturing ropes. Patented in England.

89 CHINARD, —, jun., *Rue de Cléry, Paris*—Manufacturer.
A variety of long and square shawls.

90 CHOCQUEEL, LOUIS, Labriche, near St. Denis (Seine)
—Manufacturer.

Printed long shawls, and printed gowns and dresses.

91 CHRISTOPHE, L. A., *Leschelles (Aisne)*—Manufacturer.
Various specimens of wood.

92 CHAPELLE, —, *Rue du Chemin Vert, Paris*—Inventor.
Regulators. Models for casting wheelwork.

93 COLLET, FRANCIS CHARLES, Rue des Vieilles-Andriettes, Paris—Manufacturer.

Various specimens of lace-work and trimmings.

94 CONSTANTIN, —, 7 *Rue d'Antin*, and 135 *Regent Street, London*—Manufacturer.

A variety of artificial flowers and branches, and a small tree, artificially perfumed.

[The manufacture of artificial flowers forms one of the most important branches of Parisian industry. The increase it has experienced of late years is to be attributed to the wonderful degree of perfection which has been attained in the imitation of natural flowers. This manufacture amounts annually to upwards of 400,000*l.*, of which more than a fourth is exported.—R. E.]

- 95 CORNILLON, JOSEPH HONORI, 36 *Rue du Temple, Paris*—Jeweller.
Goblets. Dressing-case stand. Étagère. Crystal flagons.
- 96 COUDREEC & SOUCARET, JUN., *Montauban (Tarn and Garonne)*—Silk-spinners. (Agent, I. S. DE GAETAN, 3 *Bow Lane, Cheapside*.)
Specimens of raw silk. Raw silk fabrics for dressing flour.
- 97 COURTEY BROTHERS & BAREZ, *Périgueux (Dordogne)*—Manufacturers.
Woolen stuffs, called *Cadis*.
- 98 COUTURIER & RENAULT, *Sarreguemines (Moselle)*, and 51 *Rue du Temple, Paris*—Manufacturers.
Silk plush for hats. Exhibited for its durability and brilliancy of dye.
- 99 CUGNOT, AMEDEÉ, 177 *Rue Montmartre, Paris*—Locksmith.
Various articles of fine and ornamental hardware and ironmongery for buildings.
- 100 CAILLO, JUN., & PRIN, *Nantes (Loire-Inférieure)*—Manufacturers.
Pilchards preserved in pure olive oil—for exportation to America, South Seas, California, Mauritius, and West Indies; the annual amount being 150,000 boxes.
- 101 DE CALIGNY—Inventor.
Hydraulic apparatus—a simplification of the hydraulic ram; especially adapted for use on small streams of water.
- 102 CANDLOT, —, 6 *Rue St. Pierre Popincourt, Paris*—Manufacturer.
Specimens of Parisian wadding prepared by machinery invented and patented by Mr. W. H. Robertson (of the United States), 19 *Boulevard Montmartre, Paris*. This wadding is carded, felted, gummed, and dried, wholly by machinery, and can be furnished in pieces of any length. Mattresses of this material are said to be durable and elastic.
- 103 COLIN, —, 30 *Rue du Bac, Paris*—Manufacturer. (Agent, E. COLIN, 17 *Wendington Street, Prince of Wales Road, Kentish Town*.)
Patent upright pianofortes. The cord-frame is made of iron to render it inflexible, and capable of resisting the effects of the weather; hence the strings are preserved from the influence of the atmosphere. This renders the harmony more easy and lasting, and the tones louder and more sonorous; and the instruments lighter than those made of wood, without increasing the cost.
- 104 CARBONNEAU, J. B. CHARLES—Producer.
Wood engravings, for typographical illustrations, being a portion of a work entitled "History of the Painters of all Schools," published by Mr. Armengaud.
- 105 CARNET, XAVIER, 1 *Rue des Jeûneurs, Paris*—Producer.
Designs for shawls, and of cashmere for dresses, &c. Designs for printed fabrics.
- 106 CARRIERE BROTHERS, Curriers, *Amiens (Somme)*—Manufacturers.
Curried calf-skins and boot-fronts.
- 107 CASTELLE, H., 55 *Rue de la Verrerie, Paris*—Manufacturer.
Waterproof gelatine in sheets. Glass-paper. Crystal-paper. Printed gelatine. Engraved and knotted gelatine. Gelatine for printing, boardings, drawings, engravings, flowers, and decorations for theatres, &c. (New invention.)
- 108 CAZAL, —, 27 *Boulevard des Italiens, Paris*—Manufacturer.
Patent self-opening umbrellas and parasols. Umbrellas for travelling, with handles capable of being disconnected.
- 109 DE CAVAILLON, —, 30 *Rue Tailbout, Paris*—Chemist.
Chemical products, obtained by purifying gas used for lighting. The principle is adopted in France by a great number of manufacturers.
- 110 COSNIER & LACHESE, *Chaussée St. Pierre, Angers (Maine et Loire)*—Printers.
King René's complete works, with a biography and notices by M. Le Comte de Quatre Barbes, to which is added a great number of designs and illustrations by M. Hawke, from the original pictures and manuscripts of King René. Printed at Angers by the exhibitors, in four quarto volumes, large size.
- 111 CHALEYER, JULES, 24 *Rue du Roi de Sicile (Marais)*—Inventor.
Beam and cutting-machine, for army equipments, jewellers, watchmakers, lamps, &c.
- 112 CHAMBON, FREDERIC, *Cheyhard (Ardèche)*—Manufacturer.
Printed and dyed fabrics. Bandannas of every description.
- 113 CHAMBON, CASIMIR, *Alais (Gard)*—Manufacturer.
White and yellow raw silk produced by a cocoon spinning-mill, which yields annually 110,000 lbs. White and yellow, the production of a silk throwing-machine, working yearly 154,000 lbs. of raw silk.
- 114 CHAMPANHET-SARGEAS, M. M. J., *Vals, near Aubenas (Ardèche)*—Producer.
Raw and thrown silk for various silk fabrics manufactured in France, England, Germany, and Switzerland. Exhibited for regularity of finish, and quality, cleanliness, colour, tenacity, and elasticity. A thread spun with 50 cocoons has sometimes a tension sufficient to support 19 or 20 ounces avoirdupois. The elasticity sometimes reaches 25 per cent.
[The incessant fluctuations to which the prices of these different commodities are subject, preclude the possibility of assigning their respective values with much precision. It may be interesting to give an approximation to their mean values per pound: cocoons, about 1s. 9d.; raw silk, 27s. 3d.; and organzine, 32s. 2d. Experience has proved that the larger cocoons (such as those which form No. 21 of the samples exhibited) are to be preferred to cocoons of smaller sizes. Their texture, apparently coarser, becomes much finer after the operation of "be-tage." They separate better; they give less down; and, consequently, their products are superior both in quantity and in quality. These large cocoons are formed by a race of silk-worms the most widely diffused, and the best acclimatized of any within the department of the Ardèche. It necessarily follows that this description of silk-worm is that which is best adapted to encounter the chances of those various maladies which are so often found to destroy the success of the crop.
The samples of organzine, numbered respectively 19, 30, 17, and 18, were produced from raw silk, corresponding with the samples of that material respectively figured 2, 3, 4, 5. The number indicated by the cocoons does not of itself constitute a standard for the regulation of the quality required by the consumer. For this purpose, there are required, in addition, skilful and practised work-

to employ these cocoons only under certain conditions determined by their own experience.

As general dealings of commerce, such raw silks as correspond with the specimens exhibited under 7, 8, 9, 10, 11, 12, 13, 14, 16, and 19, are not met. Their use is rare and exceptional. It has been the exhibitor's object in thus proving that the difficulty as hitherto been experienced in producing them successfully combated, and to direct to these the especial attention and practical experience of purchasers of silk fabrics.]

HARBONNIER, —, 347 Rue St. Honoré, Paris—
Manufacturer.

Water-bath apparatus and syphons. Various trusses, &c. for the treatment of hernia.

HARDON & SON, 30 Rue Hautefeuille, Paris—
Producers.

Various engravings and specimens of printing.

HARLES & Co., 7 Rue Furstenberg, Paris, and
22 South Molton Street, Oxford Street, London
—Manufacturers.

Machines in galvanized sheet-iron or copper, for cleaning without washing or the use of soap, and without fire; the articles; for using as baths, which can be used in 20 minutes; and for cooking roots, vegetables, &c., in, for feeding cattle, in a short time and with little fuel.

One of these machines exhibited is intended to serve as a bath and wash-house for a village; they contain basins, and eight divisions for washing linen.

Machines to make ice, ices, sorbets, iced meats, to ice and other drinks, without natural ice, in 15 minutes. Refrigeration is produced without the use of acid, by adding in the water a salt which may be re-crystallized a finite number of times, with a loss of not more than 1 per cent.

HATEL, —, Designer, 2 Rue de Mulhouse, Paris—
Manufacturer.

Carpets for silks, muslin de laine, jaconet, printed and patterned carpets.

CHENOT, ADRIEN—Producer.

Iron sponges. Iron and steel, produced by means of acid sponges without smelting the ore.

HENNEVIERE, D., Louviers (Eure)—Manufacturer.
Various articles in cloth; dyed, carded, spun, and woven in the exhibitor's manufactory.

CHEVET, JOSEPH, Palais National, Paris—
Producer.

Preserved food of all sorts—complete dinners. Dishes prepared in the first style of French cookery, with gravies and sauces ready for use.

HOMEREAU, —, Laval (Mayenne)—Producer.
Various models in wax of ornaments for jewel-boxes.

CHUARD, —, 6 Rue Carnot, Paris—Inventor.
Various lamps of a new description for mines, without fire. Apparatus for preventing suffocation and for lighting in pits and in all places lit by gas.

MOHIS & COLIN, 7 Rue des Déchargeurs, Paris,
and at Troyes and Arcis (Aube)—Manufacturers.
Various articles:—Stockings, socks, gloves, trousers, waistcoats, &c., &c.

BOUQUIN, ALEXIS, 58 Faubourg du Temple, Paris—
Manufacturer.
Various articles:—Waistcoatings, of all descriptions.

126 COLLIN, C. E., 7 Quai Conti, Paris—Engraver and
Draughtsman.

A specimen of hydrographic engraving, on a scale of 1:250,000, comprising a part of the coast of Brittany, from Perros to Port Blanc. Designed to show the method of representing in hydrographic plans, ridges, and sandy and muddy beaches, which are dry at low water, as well as those which are never covered by the sea.

A general map of the south coast of France, on a scale of 1:500,000, showing the whole extent of the coast of France on the Mediterranean, with minute accuracy.

A topographical and hydrographical map of Marseilles and the adjacent coast, on a scale of 1:250,000. A plan on a scale of 1:500,000 and a map, on a scale of 1:500,000, of Nice and the surrounding country.

A plan of the Gulf of Spezia, on the coast of Italy, on a scale of 1:250,000.

A map of the Island of Martinique.

The above plans and maps make a part of those published by the "Dépôt Général de la Marine de France."

A topographical map of a part of Mount Cenis, surveyed with horizontal curves, lighted according to the system of zenithal light, on a scale of 1:500,000; engraved from a drawing by Mr. C. Pupier.

127 COUPIER & MELLIER, 20 Rue Gaillon, Paris—
Manufacturers.

Paper made of vegetable substances, mixed with rag waste.

128 COPPIN, LEJEUNE, Douai (Nord)—Manufacturer.

Improved hides for cards. Finished and unfinished linings and plates, for wool and cotton cards.

129 COULAUX, sen., & Co., Molsheim and Klingenthal
(Bas-Rhin)—Manufacturers.

Side-arms and articles of hardware.

130 COURTOIS, AUGUSTE, sen., 28 Rue des Vieux
Augustins, Paris—Inventor.

Curvilinear piston for brass musical instruments, designed to replace the old piston at right angles. By this invention the piston has greater strength, because it is pierced only on one side, and with three holes, while in others there are four or six. Another advantage is, the absence of screws to fix and work the piston, the cover alone keeps it in its place, and it is therefore more easily taken to pieces.

131 CROPET, —, Toulouse (Haute-Garonne)—
Manufacturer.

Cottage pianoforte. Small mahogany model, with two pedals and eighty-two notes.

132 CROUTELLE, —, Rheims (Marne)—Manufacturer.

Spun yarn and sized yarn, for machine weaving. The yarn is sized by a new patent process.

133 CRUCIFIX, EUGENE, Crevecoeur, near Beauvais
(Oise)—Manufacturer.

Waterproof shoes, boots, &c. The sole is five-fold, made of strong leather, thin leather, thin wood, cork, and thin leather, preserving the feet from dampness.

134 CUDEBUE, FERDINAND, 58 Rue du Faubourg du
Temple, Paris—Inventor.

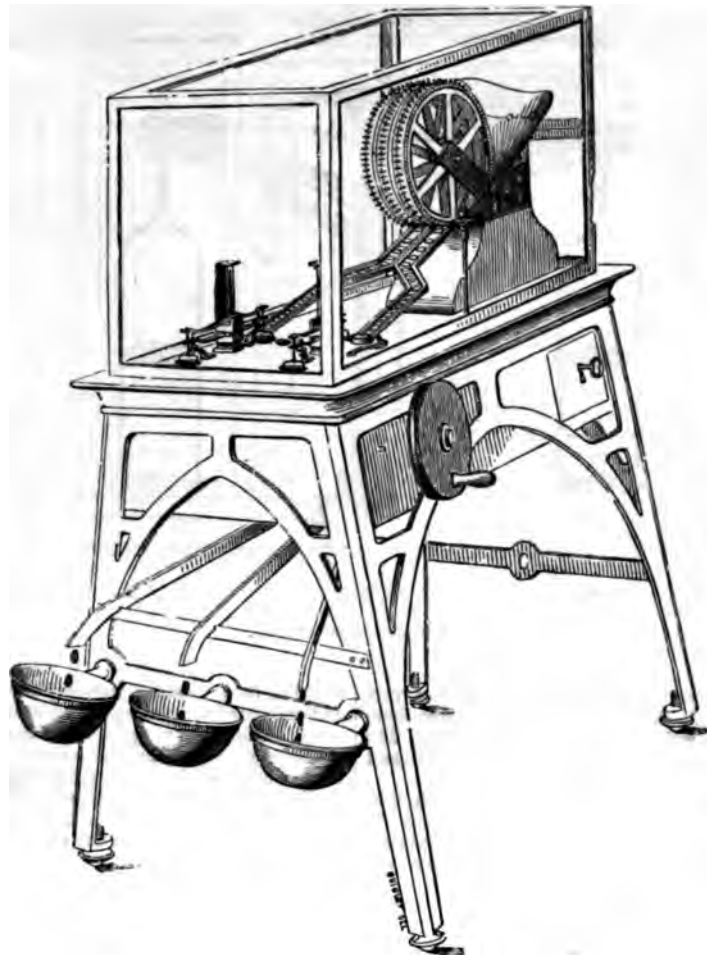
Improved fasteners, for securing windows and courtyards.

135 CURMER, ALEXANDRE, 13 Rue des Marais, St.
Germain, Paris—Producer.

Specimens of stereotype of papier maché. Of general use among French printers, and imported into England, Russia, and Denmark.

- 136 DANFORD, L. FERD. ARM., 40 *Rue St. Germain*, Paris—Manufacturer.
Movable blocks for milliners.
- 137 DAUTHEMER & Co., Lille (Nord)—Flax Spinners.
Grey and yellow linen thread.
- 138 DAVID-LARREZ & Co., Soies Eichenmond (Aisne)—Manufacturers.
Unbleached and coloured merino fabrics.
- 139 DEBRAY, CONSTANT, 73 *Rue Eschautaux*, Paris—Manufacturer.
Baskets and lamps of different shapes.
- 140 DEBUCHY, FRANÇOIS, Lille (Nord), *5ve Base*—Manufacturer.
Clothes and drills for waistings. New fancy materials for trousers.
- 141 DELAGE-MONTIGNAC, FRANÇOIS, 414 *Rue St. Honoré*, Paris—Manufacturer.
Silk threads for fishing lines; fishing nets; sweep-nets.
- 142 DELATRE & SOY, Roubaix (Nord)—Manufacturers.
Various fabrics for dresses, of long combed wool and combed merino wool.
- 143 DELEGUE & Co., Soiffres (Côte d'Or)—Manufacturers.
Woolen fabrics; combed wool; woollen yarn of different kinds.
- 144 DELPOISE BROTHERS, Roubaix (Nord)—Manufacturers.
Specimens of fine woollen and common fabrics.
- 145 DERVAUX-LEFEVRE, —, Coudé (Nord)—Manufacturer.
Chains, bolts, and other articles of hardware.
- 146 DIETSCH & Co., Strasbourg (Bas-Rhin)—Manufacturers.
Kerseymere cloths. Zephyr cloths of various colours.
- 147 DOUCET & DUCLERC, A., 21 *Rue de la Paix*, Paris, and 133 *Regent Street*—Manufacturers.
Specimens of shirting, and various manufactured articles.
- 148 DUBAR-DELESPAUL, —, Roubaix (Nord)—Manufacturer.
Cotton fabrics for trousers, and men's apparel.
- 149 DUCROT & PETIT, 11 *Rue des Fontaines*, Paris—Fan-makers.
Various fans, and pasteboard moulds for folding fan leaves.
- 150 DUBBOL, —, Sumène (Gard)—Manufacturer.
Fine yellow and white raw silks; silk gloves of different colours.
- 151 DUVAL & PARIS, 1 *Boulevard St. Denis*, and 315 *Rue St. Martin*, Paris—Manufacturers. (Agent, J. DISSARD, 57 *King Street*, Golden Square.)
Bronze and porcelain lamps, with stand, shade, and glass; different articles in bronze.
- 152 DABARET-TAMPÉ, —, Précy-sur-Oise (Oise)—Manufacturer.
Specimens of silk buttons of all sorts.
- 153 DAMAINVILLE, —, Poudron, near Crépy (Oise).
Depôt at Crépy—Producer.
Artificial honeycombs. New process of feeding bees.
- 154 DACHEL, —, jun., Amiens (Somme)—Manufacturer.
Maquettes for furniture, tapestry and carpets. Large parlour carpet, which, by a peculiar arrangement of the pattern, can be separated to form several small carpets, and put together again at pleasure.
Velours d'Utrecht, or Velours National, a patent fabric composed of silk and mohair; adapted for covering furniture, and for tapestry hangings, &c. Said to be very durable.
- 155 DAUBRIEU, —, Pontharvais (Seine and Oise), and 4 *Rue de Buci*, Paris—Manufacturer.
New process of paper-hangings, painted by hand, and washable.
- 156 DAUVILLE, ALPHONSE, St. Quentin (Aisne)—Inventor, Proprietor, and Manufacturer.
Large gauze curtains, containing the portraits of the Queen of England and Prince Albert, with the arms of England and the emblems of France.
Large muslin and gauze curtains, with ornaments and flowers, and a bouquet in the centre, exhibiting various designs in crochet, shade, relief, guipure, &c.
Large gauze and muslin curtains, containing a group of children, birds, insects, animals, fruits, flowers, and ornaments; exhibited for pattern, relief, pictorial effect, and imitation of crochet embroidery.
Large gauze curtains in crochet, with cascades, fountains, lions, naiads, swans, palms, &c. Various curtains in muslin, gauze, crochet, &c., with designs in flowers, festoons, and other ornaments.
Piece of extra fine muslin, worked in a Jacquard loom, and exhibited for quality and workmanship. Specimens of muslin in relief and in crochet; of jaconet, gauze muslin, tulle and damask; and of ornamented muslins of various descriptions.
- 157 DAVID BROTHERS & Co., St. Quentin (Aisne).
Depôt at 20 *Rue St. Fiacre*, Paris—Manufacturers. (Agents, Messrs. WALTIER, & DE VOS, Angel Court, Throgmorton Street.)
Various woollen cloths, woven with yarn combed.
- 158 DELACRETAZ & FOUCCADE, 18 *Rue Croix de Nivert*, Vaugirard, near Paris—Manufacturers.
Stearic wax candles and acids. Produced by a new patent process.
- 159 DAVID, —, Chânes, Havre—Cable Manufacturer.
Novel system of pulleys.
- 160 DELEUET, L. J., 8 *Rue du Pont-de-Lodi*, and 7 *Althorpe Street*, Gray's Inn Lane—Manufacturer.
Philosophical apparatus, delicate balances, Mint-balance, air-pumps, electric and magneto-electric apparatus, &c.
The Mint-balance, represented in the annexed illustration, fig. 1, was invented by M. Seguier, and manufactured by the exhibitor. Its use is not only to weigh coins, but also to arrange them into three kinds,—the correct, deficient, and over-weight, within a given limit. The principle of the machine is such that it will detect the variation from true weight within the limits of two-thirteenths of a grain, and one grain and two-thirteenths of a grain, according to the size of the coin, either above or below the standard. All the coins beyond this limit must be thrown aside in order to be re-cast. The labour of determining the true weight within these limits is performed by workmen at the Mint, in a tedious and irregular manner. By this machine it will be performed as follows:—the coins are thrown indiscriminately into a hopper, placed above the apparatus, and having one of its sides formed by the section of a wheel fitted with projecting pieces of steel of specific lengths, the longest being constructed to prevent the accumulation of the coins, and to lighten the bottom of the great weight which would press on it when the hopper is full; the shorter pieces,

Fig. 1.



Seguler's Mint-Balance.

between their extremities, and the bottom of the beam only the thickness of a single coin, support the coins in order to allow the lowest coin to slide, by its weight, on to the inclined plane: thus, one by one they all reach the escapement of the bearer, which lets only one piece to fall, and which, until it is entirely displaced, stops, by its escapement, the whole of the above. In this manner, the coins reach the scale of the balance, when they are next separated into the three different kinds.

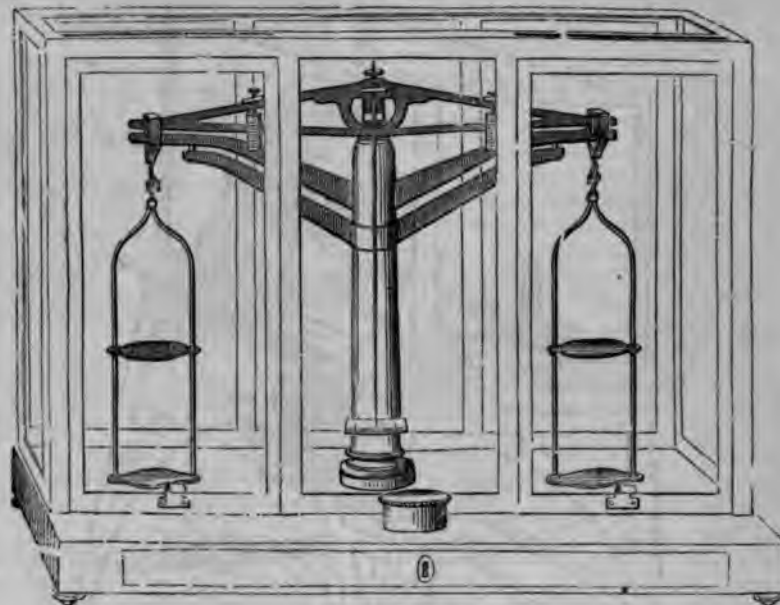
The beam, like that of all balances, is furnished with a pallet which carries a pallet on its extremity. Above the upright of the balance are placed two small plates which carry each a very fine small steel wire: this wire rests on the support of the beam. On the one extremity are needles, rest handles which communicate with bars that are stretched by springs; while the other end of these handles rest on projecting pieces.

When the whole is in the normal state, the cross-bars are level with the inclined planes which convey the coins in their proper directions. If a coin be of the legal weight, the needle above the balance-beam passes between the small plates above mentioned, and the coin falls into the middle basin, because it has taken the true direction. If it be over-weight, the needle inclines to the right, the plate, and the attached wires with it; the cross-bar then not meeting the wire, the cross-bar on the

right performs its office, stops the passage, and gives another direction to the coin, which then falls into the basin on the right. If the coin is deficient, the plate on the left is raised, the wire which stops the handle performs its office, and the cross-bar on the left stops the passage; the coin then falls into the basin on the left. This operation is performed with such regularity and precision, that a coin can be accurately weighed to the sixty-fifth part of a grain; and the machine can be put in motion by any power, and made to perform with regularity. It can weigh in each scale 50 coins per minute. The machine, represented in the cut, is composed of two balances, and can furnish 100 coins per minute; a result very superior in quantity and in accuracy to that of the best ordinary balance.

The balance, for philosophical purposes, represented in fig. 2, is so delicate that when loaded with about 9 lbs., it detects the sixty-fifth part of a grain, *i. e.*, it turns with the forty-millionth part of the weight which it will bear. It is constructed on the same principle as the great balance which the French Government purchased for the "Conservatoire des Arts et Metiers," and which, loaded with 22 lbs., detects the same quantity, or ascertains the true weight to the same degree of accuracy. This balance is exhibited for simplicity and workmanship; it stands on a solid cast-metal base, which resists the various changes of temperature.

Fig. 2.



Delenil's Delicate Balance.

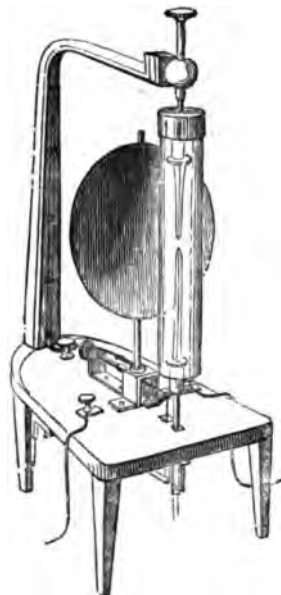
The chemical balances of the exhibitor are also very simple, and turn with the two-thousandth or three-thousandth part of the weight which they will carry. The assay balances are furnished with gilt weights of great accuracy.

The annexed illustration, fig. 3, represents the electric-light regulating apparatus, invented by the exhibitor. It is simple in construction, and may be used in all positions; it is furnished with spherical or parabolic reflectors, and

supplied by a modified Bunsen battery of fifty cells and calculated to produce the most intense light.

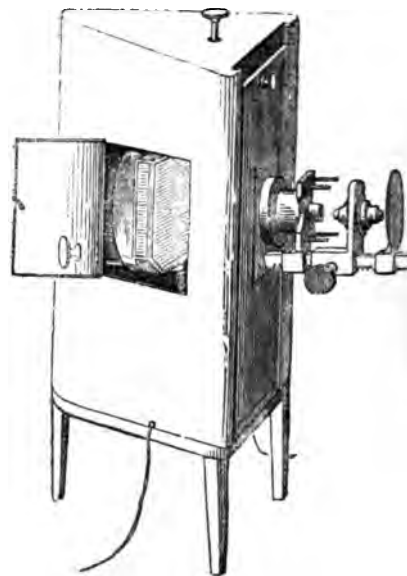
In the illustration, fig. 4, the above apparatus is in conjunction with the microscope. It acts with the electric battery, gives perfectly luminous discs of 11 in diameter; and it is arranged so that, notwithstanding the great focus of heat, bodies can be exposed to action for a long time in any experiment without going any change.

Fig. 3.



Deleull's Electric-light Regulator.

Fig. 4.



Deleull's Microscope and Regulator Combined.

AMAND, *Notre Dame de Boudeville, near Louen (Seine-Inférieure)*—Dyer. Dyed calicoes.

LÉ & Co., 36 *Quai Jemmapes, Paris*—Producers. Shoes of various sorts.

USSY, *Rue Lafayette, Paris*—Producer. Fashionable designs for panels of painted

AUX, ALEXE. ADRIEN, 6 *Rue Neuve des Champs, Paris*—Manufacturer. Upholsters, silks, dresses, &c. for furniture, mes, and church hangings, &c. Specimens process for manufacturing stuffs.

P., *Athies-les-arras (Pas de Calais)*—Manufacturer. Made of pure paste; linen pasteboard; red. Used for binding, packing, &c.

E., —, 36 *Boulevard des Italiens, Paris*—Gunsmith. Firearms; various fire and side-arms. For exportation.

K-LACOUR, *Guise (Aisne)*—Tanner and Currier. Curried hides. Calf-skins for shoes. Calf-skin-mills, for harness-makers, and for ex-

manufactory, as the spent bark is otherwise employed as fuel for the boiler of a steam-engine in motion the various machinery employed in the processes of the tannery. The power of the hydraulic press is used to remove the tannin from the spent bark; and as this still contains all portion of tannin, it is applied afresh to the press it is as dry as possible, and fit for use as fuel. The principle of tanning is that of filtration; and very strong infusion used, obtained by process of decoction, being heated economically, by directing the steam into the infusion-tank.—R. E.]

SEGER & PATRY, 8 *Rue Frépillon, Paris*—Manufacturers. Opera glasses. Gold, silver, tortoise-shell, gold, and steel spectacles. Hand and feet of every description. Patented.

N & BROSSIER, *Labriche, near St. Denis (Seine)*—Manufacturing Chemists. Manufacturers of chemical products: oxymuriate of tin, stannate of soda, red prussiate of potash, niter powder, caustic potash, carbonate of potash, indigo, carmine of safflower, cochineal extract of Campeachy, extract of Cuba, extract of logwood. Compositions for printing silk, cotton, silk, and rices, &c.

SON, 31 *Rue de Cheverus, Bordeaux (Gironde)*—Tanners and Curriers. Manufacturers of boot-legs. Calf-skins, rough, white, and

NE, —, M.D., 35 *Rue Louis-le-Grand, Paris*—Producer. Electric apparatus, and double-current magnetotubes. Inventions executed and exhibited by M. Bre and Deleuil, surgical instrument makers,

172 DUCHESNE, —, 16 *Rue Croix des Petits Champs, Paris*—Producer.

Preparation for artistical and monumental painting; applicable for flag-stones in damp places.

173 DUCROQUET, PEE. ALEX., *Rue St. Maur, St. Germain, Paris*—Organ-builder.

A church-organ, of 20 stops, in an oak carved frame; Gothic style, with detached key-boards, containing the following stops:—

The lower keys — great organ CC to C, in all five octaves.

Open diapason.

Bell flute.

Dulciana.

Stopped diapason.

Double-stopped diapason.

Principal.

Sesquialtera.

Trumpet.

Double trumpet.

Clarion.

The upper keys — swell organ CC to C, in all five octaves.

Open diapason.

Stopped diapason.

Principal.

Harmonic flute.

Viola di gamba.

Trumpet.

Hautbois.

Bassoon.

Cor, Anglais.

Pedals CCC to C, two octaves.

Open double diapason.

Ophicleide.

This instrument offers the following peculiarities:—

1. The reed-stops of the great organ are established on a separate wind-chest, and are supplied with air more highly compressed than for the other stops.

2. The stop named "Bell Flute," or "Flute à Pavillon," is a recent invention of the builder; the peculiar form of the pipes produces a great increase of power, combined with the full and melodious quality of sound so indispensable in the diapasons.

3. Harmonic flute, a stop in which each pipe gives the octave of its fundamental sound, as in the upper notes of the flute.

4. Cor-Anglais, a free reed-stop of a peculiar form.

5. The stops of the upper keys are enclosed in a swell-box, in order to produce the effects of crescendo and decrescendo.

6. The swell-stops can be combined with those of the great organ in three different ways:—firstly, in unison; secondly, in octaves above; thirdly, in octaves below. These different combinations are effected by the pneumatic levers, an apparatus in which the compressed air of the bellows adds its pressure to that of the fingers of the performer, who is thus relieved of four-fifths of the resistance which exists in the ordinary constructions. This system has been successfully applied within the last ten years to the principal organs in France.

This instrument is represented in the illustration in the next page.

174 DUFOUR & SON, *Lille (Nord), and 40 Rue de Paris*—Manufacturers.

Patent mechanical brush for polishing waxed floors, requiring but a simple movement of the arm, and attended with very little fatigue.

175 DUMAINE, XAVIER, *Tournon-sur-Rhône*—Manufacturer.

Samples of yellow raw silk; and of wrought silk, known by the name of two-thread organzine, produced from cocoons at the exhibitor's establishment. This silk is used in the manufacture of rich stuffs, ribbons, crapes, and satins, at Lyons and St. Etienne.

176 DUMEBIL, SON, & Co., *St. Omer (Pas de Calais)*—Manufacturers.

Clay pipes, patented; and pipe-clay statuettes. Samples of various articles in clay.



Ducroquet's Church Organ.

- 177 DUMORTIER, LEWIS, *Rousbecque, near Lille (Nord)*—Producer.
Samples of raw flax, French growth, retted in the river Lys (Nord), crop 1849.
- 178 DUMOULIN, SOPHIE, *44 Rue Basse du Rempart, Paris*—Inventor.
Stays without gussets. Patented invention.
- 179 DELVART, —, *Zouques (Pas-de-Calais)*—Clockmaker.
Astronomical clock.
- 180 DUPONT, AUGUSTE, *3 & 5 Rue Neuve St. Augustin, Paris*—Manufacturer.
Solid wrought and cast-iron ornamented bedsteads Spring mattresses. Patented.
- 181 DUPONT, PAUL, *55 Rue de Grenelle St. Honoré, Paris*—Producer.
Specimens of typography, including statistical tables and official documents.
Manuals, official treatises, and various periodical publications. Various impressions in lithography.
Specimens of litho-typography, being a reproduction, on stone, of old books, engravings, and writings, by a system invented by the exhibitor.
Specimens of stone stereotype, being engravings on stone by a chemical process, to supply the place of engravings on wood for illustrated works.
Samples of French lithographic stones.
- 182 DUPONT, VICTOR, *16 Rue des Francs-bourgeois St. Marcel, Paris*—Producer.
Hides (called *mastodontoides*), of a size as large as those of the antediluvian animals called *mastodontes*.



By means of the exhibitor's patent process of splitting hides, and of a certain preparation, in a single piece, hides nearly double their natural size are produced. They are particularly applicable for covering billiard-tables, or other large surfaces.

183 DUPRÉ, JEAN FRANÇOIS, *Forges-les-Eaux (Seine-Inférieure)*—Manufacturer.

Green copperas, sulphate of iron. Metallic salt, especially adapted for dyeing purposes.

184 DUPUIS, J., 22 *Petite Rue St. Pierre Amelot, Paris*—Manufacturer.

Specimens of marble chimneys.

185 DERRIÉY, C., *Rue Notre Dame des Champs, Paris*—Type-Founder and Music-Printer.

Specimens of types of various sorts. Moveable music types, of a new description.

186 DURAND, —, *La Sauvetat du Drob (Lot and Garonne)*—Manufacturer.

Stove-oven, on a new principle, patented. Reduced model of the working apparatus, one-third of its size.

187 DUSEIGNEUR, JEAN BERNARD, 36 *Rue de l'Ouest*—Sculptor.

A colossal group in plaster: Michael, conqueror of Satan.

“The sword
Of Michael, from the armoury of God,
Was given him, temper'd so that neither keen
Nor solid might resist that edge.”
Milton, "Paradise Lost," Book vi.

This group was executed at Paris, and is represented in the adjoining Plate (63).

188 DIETRICH & SON, *Niederborns (Bas-Rhin)*—Manufacturers.

Specimen of a cast-iron statue. Sheet of cast iron, 7 feet by 2 feet, and $\frac{1}{4}$ inch thick. Ornamental iron casting, with names of the exhibitors. Two boxes containing 11 specimens, and two others containing 24 specimens of iron casting. Dishes, stew-pans, and various articles of wrought iron.

189 DUVAL, ACHILLE, *Caen (Calvados)*—Producer.

Yellow and white silk yarn, especially adapted to lace and blonde manufacturing.

190 EYROT, CLAUDE NICOLAS, *Charmes (Voges)*—Manufacturer.

Imitations of different marbles, done by means of oil-stucco. An entirely new process.

191 EMMERICH & GOERGER, SON, *Strasbourg (Bas-Rhin)*—Manufacturers.

Black, grey, and metal-hue morocco skins.

192 ENGELMANN & GRAF, 12 *Rue de l'Abbaye, Paris*—Producers.

Specimens of patent mechanical process for lithographic printing in colours.

193 FRÈRE EUSTATE, of the *Institute of Brothers of Christian Schools at Lille (Nord)*—Inventor.

Cereal and green herb-mowing machine, invented by Frère Eustate, and executed by Albert Dutriez, his pupil.

This machine is a carriage surmounted with four scythes. Two of these scythes are placed horizontally, and are moved by wheels acting on each other, and, passing over two others having the form of an angle or fork, they thus mow down what is embraced by the latter.

At the head of the carriage is an adjusting screw, which permits the cutting to be performed higher or lower. To the side of the carriage is fixed a stopper, which thrusts

back the corn or grass as it is cut. This machine is exhibited for execution and economy of time. Its advantages are best appreciated when employed during unsettled weather. The machine is of working dimensions, and is made of ash, and cast and wrought iron.

194 FRASSIN, —, jun., *Reims (Marne)*—Manufacturer.

Woollen fabrics, cashmere, and valentia waistcoatings.

195 FORGROT, E., & Co., *Salaur, Thié, near Amiens (Somme)*—Manufacturers.

Spun goat hair. Skeins and reels of double-spun goat hair. Raw and combed goat hair.

197 FAYOLLE, L. T., 180 *Galerie de Valois, Palais National, Paris*—Producer. (Agent, M. DESCHAMP LEGRAND, 57 *Fifth Street, Spoh Square.*)

Crosses, of the various French and foreign orders, made of gold, silver, and imitation metal. Paste jewels, embroidered ribbons, and decorations of all sorts for freemasons.

198 FÉAU-BÉCHARD, VICTOR AMÉDÉE, *Passy-les-Paris (Seine)*—Manufacturer.

Woollens and cashmeres, dyed in various colours. Designed for manufacturing Cashmere shawls and fancy articles.

199 FELIX, ALEXANDRE, 40 *Rue St. Honoré, Paris*—Manufacturer. (Agents, MM. GRAETZER & HERMANN, 8 *Huggin Lane, Wood Street, Cheapside.*)

Fans of all descriptions. Wedding dresses and other articles, rich style. Jewellery, and French skins for fans.

200 FEROUËLLE & ROLLAND, *St. Quentin and Tarare. Dépôt, 8 Rue du Sentier, Paris*—Manufacturers.

Blinds and figured articles for furniture. Plain and figured muslins, tartalanes. Fancy stuffs for dresses, &c.

201 FAUQUET-LEMAITRE, —, *Bolbec (Seine-Inférieure)*—Flax Spinner.

Tow threads; linen threads; warp and weft for power-loom weaving; weft of cotton waste.

202 FAUVELLE, DELEBARRE, 10 *Boulevard Bonne Nouvelle, Paris*—Comb-maker.

Tortoiseshell and buffalo-horn combs.

204 FLAISSIER BROTHERS, *Nîmes (Gard)*—Manufacturers.

Carpets of different descriptions; Wilton carpets, &c.

205 FONTANA, Mrs., 41 *Rue des Marais, Paris*—Manufacturer.

Pencils for painters in miniature, water-colour, architecture, and china. Gold and silver prepared for ornamenting china.

206 FORTÉL, LARBRE, & Co., *Reims (Marne)*—Manufacturers.

Stuffs for waistcoats, dresses, cloaks, and paletots.

208 FROMENT, C., 15 *Rue Neuve St. Méry, Paris*—Manufacturer.

Wooden shoes of different shapes.

209 FEYREUX, —, 10 *Rue Taranne, Paris*—Manufacturer.

Pastes, &c., nutritious meals, chocolates.

210 FIEUX, SON, & Co., *Toulouse (Haute-Garonne)*—Tanners and Carriers.

Various sorts of leathers, for saddle, harness, makers, &c.

211 FIOLET, LOUIS, *St. Omer (Pas-de-Calais)*—
Manufacturer.

Specimens of pipes made of clay.

[The exhibitor manufactures yearly above 200,000 gross of pipes, either plain or varnished, differing in size, form, and length, according to the demand. They are made of 1,200 different shapes, plain or ornamented, representing historical or fancy figures, animals, &c. By means of an enamel invented by the exhibitor, brilliancy can be given to the plainest pipes.

Crucibles, fire-proof bricks, of all shapes, dimensions, and weights, for constructing ovens, furnaces, vaults, tiles, square flat tiles, &c.

The work is composed of 11 subdivisions, as follows:—
1. The moulding. 2. The polishing. 3. The rubbing and packing. 4. The enamelling and baking. 5. The carpentry. 6. The brick and crucible making. 7. The carving. 8. The forging. 9. The sawing. 10. The engraving. 11. And the drying.

The following quantities of materials are employed in the manufacture:—Clay for pipes, 1,540,000 lbs.; clay for crucibles and bricks, 396,000 lbs.; potters' earth, 198,000 lbs.; oak and other fagots, 220,000; oak wood, 458 cubic yds.; pit-coals, 8,250 bushels; coke, 660,000 lbs.; iron and steel, 3,300 lbs.; cast iron, 6,160 lbs.; copper, 2,200 lbs.; white wax, 440 lbs.; Marseilles soap, 440 lbs.; oil, 15 tuns; enamels of all colours, plain or powdered, £400; deal boards, of all thicknesses, from the North, for making boxes, £1,000; nails, of all sorts, 4,840 lbs.; hay, for packing up pipes, 55,000 lbs.; wheat chaff, for packing up, 12,000 sacks.]

212 FIRMIN-DIDOT BROTHERS, 56 *Rue Jacob, Paris*—
Printers, Booksellers, and Paper Manufacturers.

Books and various publications. Henrii Stephani Thesaurus Græcæ Lingua; Ducange, Glossarium Medie et Infimæ Latinitatis; Bibliotheca Scriptorum Græcorum; Trade Directory, &c.

[The establishment of the exhibitors gives employment to 900 workmen, and their mills furnish five tons weight of paper of all kinds per day.]

213 FLAMET, —, jun., 87 *Rue St. Martin, Paris*—
Inventor and Manufacturer.

Elastic stockings without seams, for varicose veins.

214 FLEURY, P. F., *Teste de Buch, near Bordeaux (Gironde)*—Chemist.

Purified marine turpentine, produced by a new process for purifying the raw turpentine found in the wastes of Bordeaux. This turpentine is exhibited for its clearness, transparency, and drying qualities. It is of great utility in the composition of varnishes, and it can be manufactured at less than half the cost of the turpentines of Chio, Venice, Strasbourg, Sweden, and Boston.

215 FLOBERT, —, 3 *Rue Racine, Paris*—Gunsmith.

Guns, muskets, and pistols, constructed on a new patent principle adopted by most of the gunmakers of France.

218 FROELY, ANTOINE, 37 *Rue Battant, Besançon (Doubs)*—Manufacturer.

Various files made of French cast steel; some of which are cut by the hand, others by machinery, by a process improved by the exhibitor.

219 FROMAGE, LUCIEN, 5 *Rue des Petites Eaux, Darnetal (Seine-Inférieure)*—Inventor.

Power-looms for weaving, improved by the exhibitor. For weaving Rouen and Scotch articles.

220 FROMONT & SON, *Chartres (Eure and Loire)*—En-
gineers. (Agent, E. OPPENHEIM, 33 *Boulev. Street*.)

An improved double turbine, on Fontaine's principle. This engine is represented in the accompanying Plate 212 and illustrations.

This turbine possesses the following advantages over the ordinary water-wheel, that it requires no accelerating gear, the driving shaft moving with a velocity of 100, 150, to 200 revolutions, according to the machinery, per minute. A special building being unnecessary, the economy becomes considerable, and in large factories it attains a very high ratio. In proof may be mentioned the two turbines supplied to the furnaces of Rachecourt-sur-Marne, near St. Dizier. It required the power of 140 horses, upon a fall of 3 feet 15 inches, reducing itself sometimes to 2 feet. The two turbines were placed under ground, beneath the flating machines, and only required for each a canal of 16 feet 3 inches wide; whilst to give the same results, water wheels would have required a canal of 97 feet 6 inches wide, therefore effecting a great saving.

The double turbine is adopted in rivers where the tide is variable. These machines are now made with independent compartments, that is to say, composed of wheels working together or separately, and constructed so that the compartment, when not required, is detached from the other wheels which continue to work singly. In this manner, in shallow waters, the maximum of momentum is obtained.

By an application of the governor of Watt, the velocity of the machine is regulated. In testimony of the efficiency of these engines, the following facts may be stated.

The turbine of the flour-mill of Vadenhay, near Châlons-sur-Marne, gives an effective power of from 78 to 79 per cent. upon 6 feet 3 inches of fall. The experiments by which this amount of effect was determined were made by Mr. Taff, Professor of the School of Arts and Sciences; Messrs. Alcan and Grouvelle, Engineers; Mr. Ball, at Pontaudemer; Raffray, at Angers; Leenhart, at Sorgues; de la Portilla, at Seville, &c.: the results have all exceeded 70, and several of them have been as high as 78 per cent.

Those of Mr. De la Cuetara, at Palencia (Spain), have given 76 per cent. The turbine of Brunet and Company, at Pontaudemer, although with a small fall of 2 feet 7 inches, has given 70 per cent. of effect.

The turbines of the National Manufactory of Tulle, St. Chamas and Chatellerault, have shown an effect of 73 per cent., and a constant velocity, notwithstanding the variations of the fall, of from 4 feet 11 inches to 11 feet 6 inches.

The out-of-water pivot is constructed in such a manner that in case of accident it can be changed in less than five minutes.

The propeller is manufactured of an entire piece, and hence does not require repairing; turbines of this construction have been in use for the last eight or ten years without having cost anything for wear and tear.

The following report is made by M. Arthur Morin, member of the French Institute, in the second volume of his Lessons of Practical Mechanism. After having mentioned experiments made with this propeller, and having examined the results, M. Morin adds,—“Thus the velocity of the wheel may in general vary 0.25 from the one which corresponds with the maximum result, without the efficiency of the result necessary to the absolute work expended by the propeller being diminished more than one-sixteenth to one-twenty-fourth. This qualification is, as every one knows, an immense advantage to manufactories where the nature of the work requires that the propeller should take different velocities.”

The arrangement of the working of the valves of this turbine permits the adoption of a regulator of centrifugal power, in all cases where accidental variations of the tide, or resistance, might produce accelerations or stoppages injurious to the working of the machinery.

Another feature in the machine is for gearing and putting out of gear the cogs.

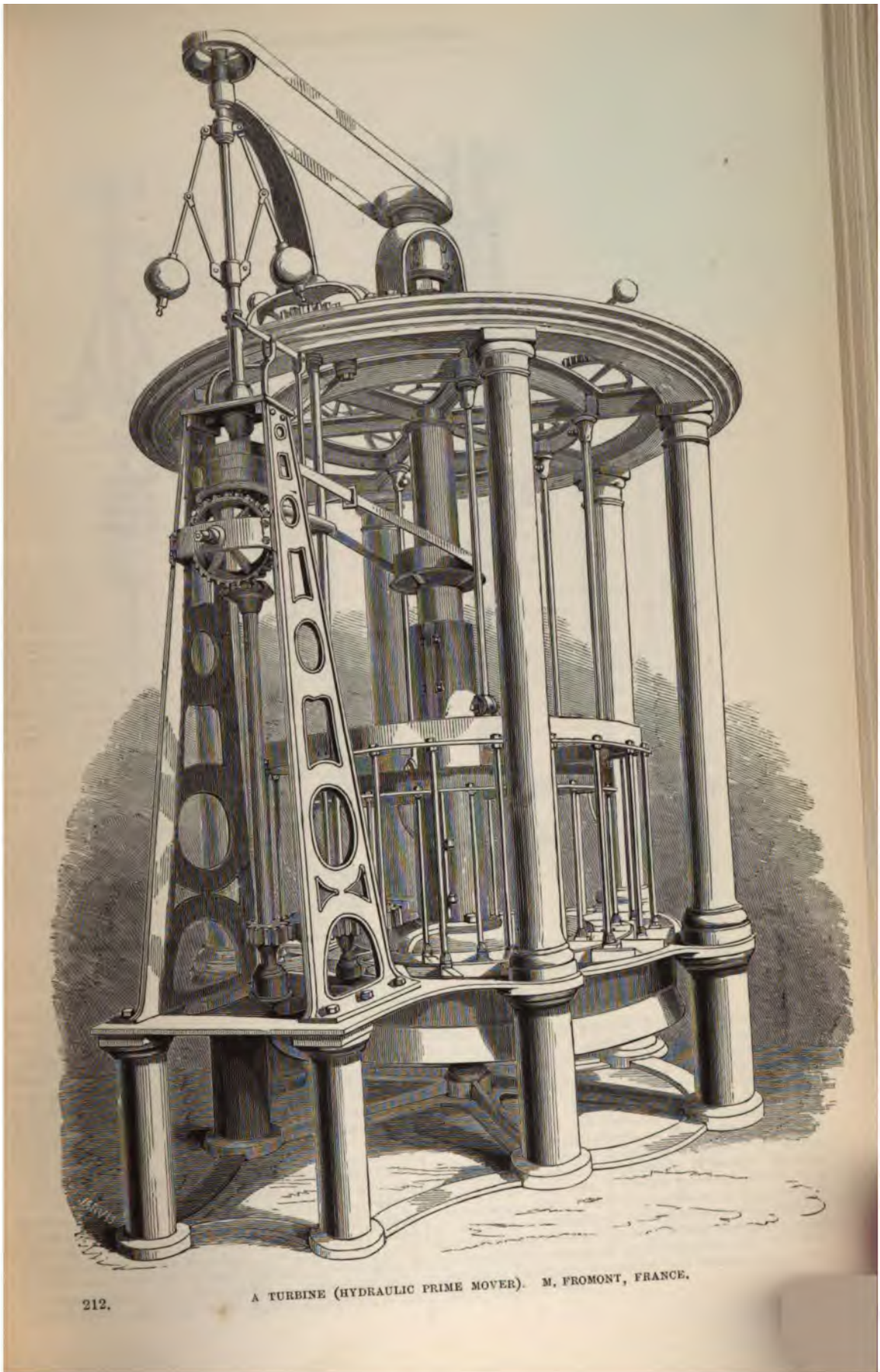
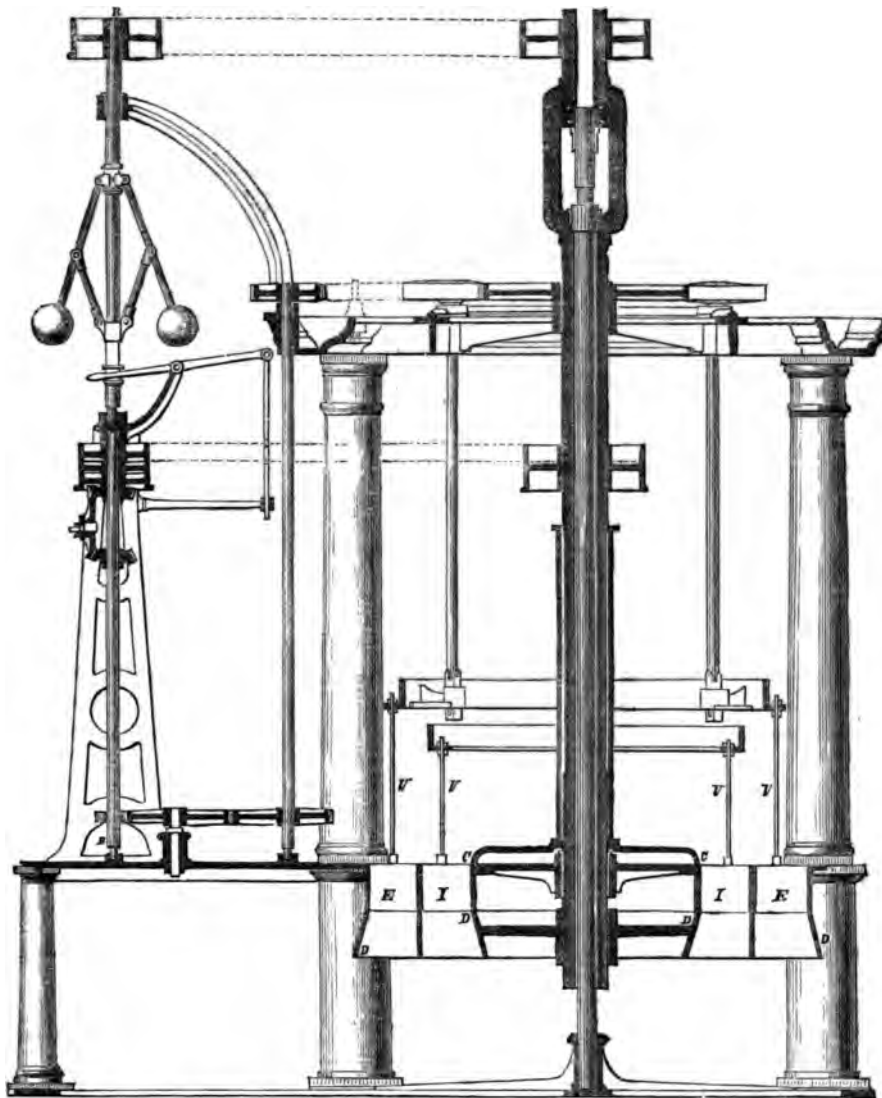




Fig. 1.



Fromont's Double Turbine.—Sectional Elevation.

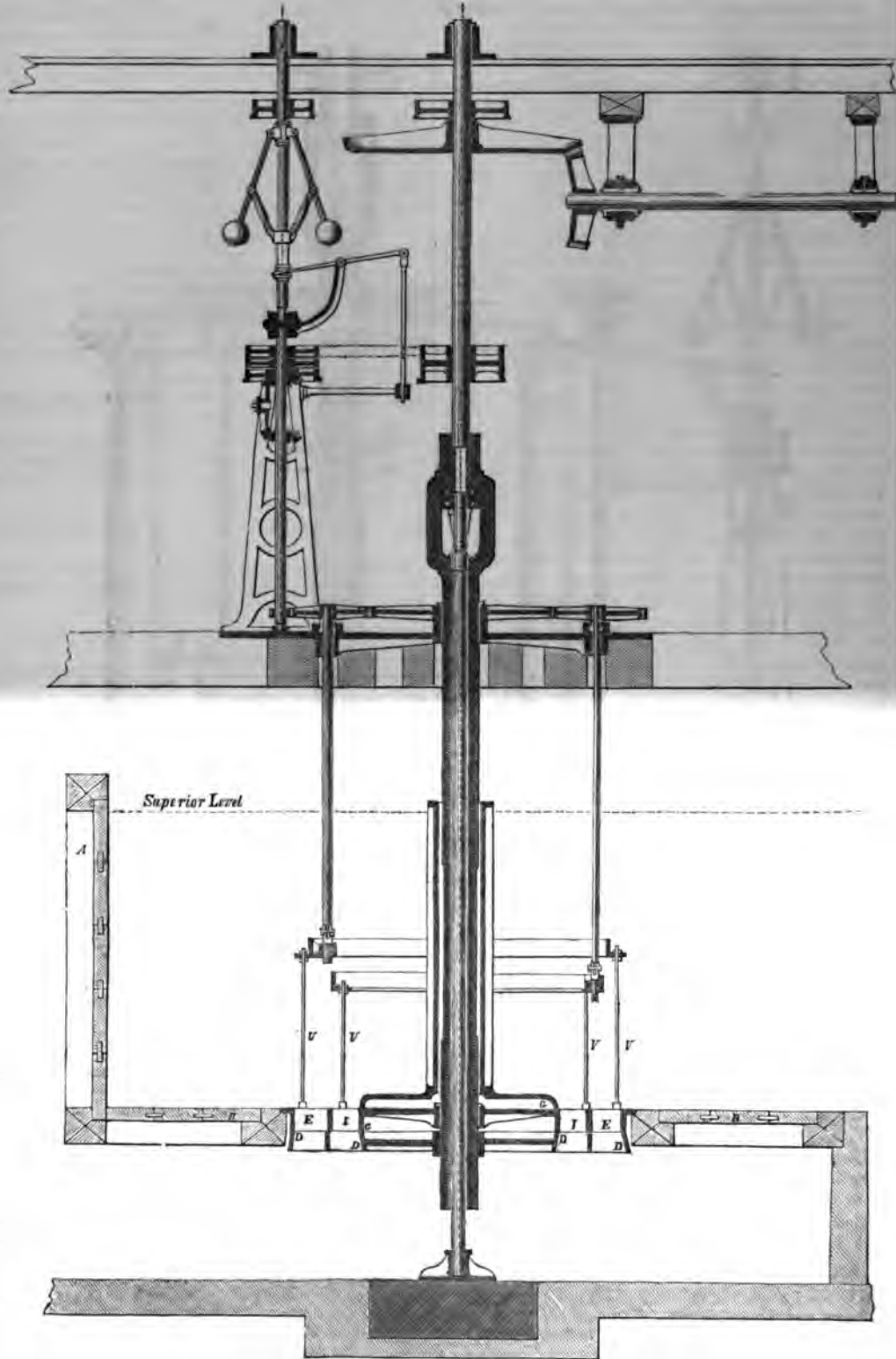
1.—This figure represents a sectional elevation of the turbine sent to the Exhibition.

2.—This illustration is a sectional elevation of a turbine as applied to the purposes of an ordinary power, and *in situ*; the letters of reference corresponding in both figures, their equivalents need here be given:—

The dotted line represents the upper level of the water in the canal formed by the wall A at one end, and the floor, or bed, B. To this canal the water of the river is conducted, and it represents in its passage to the turbine the mill-pool of the ordinary water-wheel being its source of supply. The course of the water from the communication of its movement to the engine is through the chamber of C, from which it escapes through an orifice, and strikes against the curved sides of the

turbine D, which are arranged in the opposite direction. By this, rotary force is generated, which is communicated through the perpendicular shaft, and thence led off at will. The machines made by the present exhibitors possess a simple arrangement for increasing or diminishing their force and velocity. This is represented by the letters V V, E E, I I, and D D. Of these, the letters E and I represent additional compartments of the turbine D, which may be opened or closed at will by the rods V V, with a corresponding increase or diminution of power. By connecting these rods with a Watt's governor, placed on a perpendicular shaft, called the regulator, R R, a method of regulating the velocity of the engine is at once obtained, the centrifugal force of the balls acting alternately upon the opening or closing of these compartments, and producing, as the result, a constant and balanced movement of the whole machine.

Fig. 2.



Fromont's Double Turbine. Sectional Elevation of a Working Arrangement.



220A FOUCAULT, PIERRE (Blind), 28 Rue de Charenton, Aux Quinze Vingts, Paris—Inventor.

Writing apparatus for the use of the blind, adopted by the Institution of the Young Blind, of Paris.

Two kinds of apparatus, called "cecographs," for writing in black characters and small-hand. Two apparatus for writing in large raised letters. Reproducing machine giving two copies at once; one, the letters of which are black and small, for the use of those who enjoy their sight; the other, reproduced in raised letters on much larger paper, for the convenience of the blind. Also a printing key-board, by which the blind are enabled to write with great rapidity, and without previous instruction.

[The blind person who makes use of the exhibitor's machine is enabled to write without ever having learned to form a letter. It is sufficient for him to know how to read by the touch, to be able to express his thoughts in a legible manner, as it is traced in typographic characters. This curious result is thus obtained—all the letters of the alphabet, raised and of large size, are fixed to the upper extremity of a metallic rod, which slides longitudinally into a groove. These rods are placed in a row of a fan-like form, and each has the same letter at the lower as at the upper part. The letter at the lower part, which is of a small size, is a typographic character. The mechanism is so arranged that all the letters converge to the same point, and when pressed down by the fingers their marks would smear and form only a black spot, were it not that, each time a letter is touched, the paper moves the necessary distance, and clear, straight, and legible writing is produced. The line being terminated, the paper displaces itself perpendicularly, and the operation recommences. Besides these letters, the apparatus places a series of figures and stops at the disposal of the blind writer. The exhibitor makes use of tracing paper, by which he is enabled to produce several copies at once. This machine is very small in size, portable, and possesses great simplicity and rapidity of action.]

221 FOURNIVAL, ALTMAYER, & Co., Réthel (Ardennes), and at Solesmes (Nord); 46 Rue de l'Echiquier, Paris—Proprietors and Spinners.

Various specimens of dyed merino.
Samples of warp, weft and half-warp worsted.

222 GAUDCHAUX-PICARD, —, jun., Nancy (Meurthe)—Manufacturer.

Fine woollen cloths and fancy articles.

223 GESSON-MAZILLE, —, Réthel (Ardennes)—Manufacturer.

Pieces of merinos, unbleached and dyed.

224 GIGOT & BOISOTAU, Rheims (Marne)—Manufacturers.

Merino fabrics, unbleached and coloured.

225 GAILLARD, —, 210 Rue du Faubourg St. Denis, Paris—Manufacturer.

Copper, iron, and brass-wire gauze, &c.

226 GAILLARD, —, jun., La Ferté-sous-Jouarre (Seine and Marne)—Producer.

Various grinding-stones. Grinding-stones in pieces, manufactured and dressed, with rays. Squares of grinding-stones. The above are fitted for grinding all sorts of grain.

[The millstones obtained from this source are in great repute, not only in France, but also in England and America. La Ferté-sous-Jouarre is situated in the

valley of the river Maine, which passes through the town. The millstones are exported in vessels in large quantities from La Villette to Rouen or Havre. The stones, which are silicious conglomerates and full of empty spaces which give them a permanently rough surface, are found in irregular blocks in an alluvial bed, and covered by a stratum of surface soil of variable depth. The stone is slightly coloured by ferruginous matter, and it is stated that occasionally portions of carbonate of lime are found in its substance, it being extremely rare to obtain specimens entirely homogeneous. The discovery of the blocks is a matter of difficulty and uncertainty, and often of fruitless expenditure, and gives employment to a large number of persons.—R. E.]

227 GAGNEAU BROTHERS, 25 Rue d'Enghien (Paris)—Inventors and Manufacturers.

Specimens of lamps in porcelain and artificial bronze. Suspension lamps, for dining-rooms and various other purposes.

228 GALIMARD, N. A., 4 Rue Honoré Chevalier, Paris—Producer.

Designs for manufactures:—Epistolographers writing their epistles. St. Apolline. St. Laurent—made on window-glass, for decorating the choir of St. Laurent's Church in Paris.

229 GALLICHER & Co., Bigny and Forge-Neuve (Cher)—Manufacturers.

Specimens of iron (called iron of Berry); used for agricultural implements, edge-tool making, ironmongery, machine making and carriage building.

230 GANDILLOT & Co., 40 Rue Bellefond, Paris—Manufacturers.

Bronze bedsteads, with ornaments of or-molu. Chairs and sofas made of tubular iron. Specimens of the iron tubes employed; and also of gas tubes, and steam-pipes of different dimensions. A double spiral coil of iron tube for a refrigerator, or still. A helical coil of the same tube.

231 GERENTE, A., Quai d'Anjou, Paris—Manufacturer.

Specimens of stained glass.

232 GARACH, JOSEPH, Roquemingarde (Hérault), near Montagnac—Producer.

Written compositions, for educational purposes, leaving blank the tenses of verbs.

233 GARNAUD, EMILE FRANÇOIS, jun., Choisy le Roi, and 9 Rue St. Germain des Prés, Paris—Manufacturer.

Specimens of white terra cotta.

This terra cotta, which has the colour and solidity of fine hard stone, is used with advantage in ornamenting the exterior of buildings. It is not affected by frost, or changes in the weather, and it is especially applicable for use in the restoration of ancient mansions and edifices. It is cheap, firm, and well adapted for works in sculpture.

234 GAUTHIER, P., jun., 14 Rue de la Parcheminerie, Paris—Inventor.

Printing type, with bearing-blocks, vignettes, &c. New invention, patented in France and in foreign countries.

235 GAVARD, ADRIEN, 9 Quai de l'Horloge, Paris—Manufacturer.

Diagraphs and pantographs, for copying maps, charts, tableaux, and drawings of all descriptions. The diagraph is furnished with magnifying glasses for copying minute objects.

- 236 GIDE & BAUDRY, 5 Rue des Petits Augustins, Paris—Booksellers and Stationers.

Specimens of books:—

Monument de Ninive. Exploration Scientifique de l'Algérie. L'Architecture de V. au XVI. siècle. Voyage en Perse. Voyage de Dumont d'Urville au Pole sud, et dans l'Océanie.

- 237 GILBERT, CHARLES ISIDORE, 63 Rue du Bac, Paris—Inventor.

Patent painted blinds, waterproof.

- 238 GILBERT, L., & Co., Givet (Ardennes). (Agents, A. CHAUFFOURIER, 9 Sackville Street, London, and MOUCHICOURT BROTHERS, 18 Rue Quincampoix, Paris.)

Pencils made from a composition by the exhibitors, and graduated by Nos. $\frac{1}{BB}$, $\frac{2}{F}$, $\frac{3}{H}$, $\frac{4}{HH}$, $\frac{5}{HHH}$, and $\frac{0}{HB}$

are applicable to the purposes of drawing, architectural designing, counting-house and general purposes. The No. 1 supplies the darkest tint, glosses but slightly, adheres firmly to the paper, and produces the finest sketches. All the kinds are soft and firm, and the label on each dozen indicates the use of that particular pencil.

Pencils for drawing on wood represented by—

A B C
 $\frac{BH}{H}$ $\frac{H}{H}$ $\frac{HHH}{H}$

Coloured chalk pencils, 24 in number, forming three collections of 12, 18, and 24 colours, comprising black, white, blue, bistre, orange, chrome yellow, carmine, yellow ochre, ultramarine, sap green, mineral green, burnt Sienna, Naples yellow, light red, vermilion, raw Sienna, olive green, neutral tint, amber, Veronese green, grey, cobalt, purple, and pink. As these colours may be superposed on each other, every shade may thereby be obtained.

The superiority of the colours from which these pencils are composed is a guarantee of their durability. Instructions for their use, in every description of sketching, is annexed to each collection.

- 239 GRATIA, —.—Producer.

Pastel drawings, a new system of the application of pastel.

- 240 GODARD & BONTEMPS, Cambrai and Valenciennes (Nord); Bapaume (Pas de Calais); Vervins (Aisne); Clermont (Oise); 40 Rue de Cléry, Paris—Producers.

Specimens of lawn and cambric.

- 241 GOUIN, A., 37 Rue Louis-le-Grand, Paris—Painter.

Coloured daguerreotypes, exhibited for novelty and beauty of colouring, and similarity to miniature painting.

- 242 GÉRIMER, —, jun., St. Etienne (Loire)—Manufacturer.

Specimens of ribbons.

- 243 GRANDJEAN, OLYMPE, 8 Cité d'Antin, Paris—Inventor. (Agent, M. de FONTAINE MOREAU, 4 South Street, Finsbury.)

Flowers made of spun glass, by a new process for making artificial flowers, patented in England.

- 244 GRANDBARBE, —, 43 Rue des Marais, St. Martin, Paris—Producer.

Design for manufacturing carpets.

- 245 GRAUX, JEAN LOUIS, Ferm de Hauchamp, Commune de Juvin-court (Aisne)—Producer.

A fleece of wool, of great fineness and silky character, produced by a peculiar variety of merino sheep.

- 246 GREMAILLY, —, jun., Hotel du Sauvage, Gray (Haut-Saone)—Manufacturer.

Boxes of preserved food. Boxes of six, twelve, or twenty-four dishes; intended especially for navy officers, sportsmen, and travellers.

- 247 GRENET, LOUIS FRANKLIN, Rouen (Seine-Inférieure)—Manufacturer.

Gluc. Gelatine (called *grenetine*). Various sorts of gelatine and gelatine articles, such as flowers, ornaments, &c.

- 248 GROS, ODIER, ROMAN & Co., Wesserling (Haut-Rhin)—Manufacturers. Dépôts, 15 Boulevard Poissonnière, Paris; and SALOMONS & SOUS, 42 Old Change, London.

Cotton yarn; printing calico; bleached calico; muslin de laine; Scotch cachmere; woollen and cotton cloth; plain barege, figured barege, and poplin.

Specimens of bleached cottons and bleached woollens. Specimens of roller, perrotine, and block printing, on calico, jaconet, fancy cloth, plain and satin-faced muslin, ornamented and figured muslin, muslin de laine, woollen and cotton fabric, silk and woollen fabric, barege, poplin, &c.

Long and square shawls, in barege, Scotch cachmere, &c. Dresses with flounces, &c.

Cambrics half-ground, plain muslin, printed for Messrs. Faulding, Stratton, and Co., Coventry Street.

Figured muslin, and muslin de laine, designed and printed for Messrs. Debenham, Pooley, and Smith, Wigmore Street. Figured muslin, poplin, and satin-faced barege, designed and printed for Messrs. Swan and Edgar, Piccadilly. Plain, striped, and figured muslin, and plain barege, printed for Messrs. Marshall and Snelgrove, Vere Street. Striped and figured muslin, printed for Messrs. Halling, Pearce, and Stone, Cockspur Street.

Jaconet, and figured muslin, designed and printed for Messrs. Dickens, Stevens, and Dickens, Regent Street.

Figured muslin, barege, and poplin, designed and printed for Messrs. Howell, James, and Co., Waterloo Place.

Figured muslin and barege, designed and printed for Messrs. Lewis and Allenby, Regent Street.

Long and square shawls on plain barege, satin-faced barege, and Scotch cachmere, designed and printed for Messrs. B. Salomons and Sons, Old Change.

- 249 GROSSELIN, A., 7 Rue du Battoir St. André, Paris—Producer.

Celestial globe. Georamas and uranoramas, used as lamp-shades. New sphere on the Copernican system. Terrestrial globe, with spherical canopy, to represent the alternations of day and night.

- 250 GUESNU, —, 70 Rue du Temple, Paris—Producer.

Fancy papers. Embossed covers. Specimens of gold, silver, and coloured printing.

- 251 GUILLEMOT BROTHERS, Meulan (Seine and Oise)—Manufacturers. Dépôt, 88 Rue Neuve des Mathurins, Paris.

Specimens of coach and livery lace.

- 252 GUINIER, THOMAS, 25 Rue de Grenelle St. Honoré, Paris—Manufacturer.

Specimens of cocks, requiring no adjustment, with a flexible stopper in leather or vulcanized India-rubber.

They are peculiarly applicable to under-pressure (the passage of the water contributing to their stoppage); to boundary fountains, water-closets, and the distribution of waters. They are said to last longer than the old system of cocks, and are easily repaired.

- 253 GUYOTIN-LOBSIGNOL, —, *Rheims*, 15 & 99 *Rue du Bourg, St. Denis (Marne)*—Manufacturer.
Specimens of blankets, from the coarsest to the finest quality.
- 254 GUYNET & BECQUET, 33 *Rue du Sentier, Paris*; at *Valenciennes, Cambrai and Nancy*—Manufacturers. (Agents in London, GRAETZER & HERMANN, 3 *Huggin Lane, Wood Street, Cheapside*.)
Printed and embroidered white cambric handkerchiefs.
- 255 HADROT, G., jun., 39 *Faubourg St. Martin, Paris*, and 289 *Regent Street, London*—Inventor and Manufacturer.
Patent moderator lamp, an improvement on the carcel lamp. Exhibited for simplicity and cheapness.
- 256 HARTMANN & SONS, *Munster (Haut-Rhin)*—Manufacturers. Depôts at *Lyons* and 32 *Rue du Sentier, Paris*.
Spun cottons; white calicoes; cambric muslins; jaconet muslins; and printed woollen and cotton fabrics. New designs by the exhibitors.
These goods were spun, woven, and printed in the establishment of the exhibitors.
- 257 HARTMANN & Co., *Malmerspach (Haut-Rhin)*—Manufacturers.
Various specimens of combing by machinery, and spinning of combed wool.
Specimens of fine raw wool, combed by machinery, and made into yarn for the manufacture of shawls and other articles.
- 258 HAYOT, JULES JOSEPH, *Caen (Calvados)*—Coachmaker.
Four-wheeled carriage, with moveable seat. Patented. Constructed so as to be divisible into two separate parts, and form a pair of two-wheeled tilburys.
Patent four-wheeled carriage, with moveable axle. The novelty and advantage of this invention consists in its forming a four-wheeled covered or uncovered carriage, or by being divided, forming two tilburys. The economy and utility of this carriage is that it gives to the purchaser the advantage of three carriages, in which he can ride in the society of several persons, or else alone. In case of accident the fore or hind part can be immediately detached and formed into a tilbury.
- 259 HEILGENTHAL & Co., *Strasbourg (Bas-Rhin)*—Producers.
Specimens of ornaments in stone-mastic, for decorating the inside or outside of buildings.
These ornaments and mouldings are manufactured by means of metal moulds; the paste, or mastic in a soft state, is pressed into these moulds by extremely heavy weights, similar to those used at the Mint, and by these means it acquires that durability and polish which is necessary for the gilding process. These ornaments are employed principally for interior decorations, but by being covered with a coat of copal varnish they may be employed likewise for exterior decoration. A specimen may be seen which has stood every kind of weather during twenty-five years.
- 260 HELBRONNER, GUSTAVE, 129 *Rue Montmartre, Paris*—Producer.
Specimens of needlework, and canvas for ornamental work.
- 261 HENOE, —, 1 *Rue St. Sauveur, Paris*—Producer.
Screens and feather-brooms, of various colours, made of ostrich, peacock, cocks of France, and other birds' feathers. Made for exportation.
- 262 HENRI, JOSEPH, 21 *Passage Delorme*, and 12 *Rue de Rivoli, Paris*—Manufacturer.
Ortho-strabic glasses for persons affected with squinting. Sight-preservers for ophthalmia and weak sights.
- 263 HESS, GUSTAVE, 6 *Rue de la Villiere, Paris*—Manufacturer. (Agent, 1 *Bread Street, London*.)
Figured fabrics (cotton or fancy warp, weft with pure combed wool), in various styles, but particularly for waistcoats.
- 264 HOEN, JEAN BERNARD, *Nimes (Gard)*—Inventor.
Patent system of windows, blinds, and shutters, simple, and without machinery, springs, or gear.
- 265 HOSTIN, —, *Etel (Morbihan)*—Producer.
Specimens of flowers, leaves, and baskets made of shells.
- 266 HUARD BROTHERS, *Versailles (Seine and Oise)*—Manufacturers.
Nautical chronometer-works of various sorts.
- 267 DELAROCHE-DAIGREMONT, —, 17 *Rue de la Paix, Paris*—Manufacturer. (Depôt, 8 *Maddox Street, Hanover Square, London*.)
Embroidery, net, lace, wedding dresses, baby's dresses, and trimmings.
- 268 HUBERT, Madame JOSEPHINE, *Mondeville near Caen*; 2 *Rue du Grand Chantier, Paris*—Inventor and Proprietor.
A guipure quilt, in relief; a trimming for dress in guipure, also in relief; flounces, wreaths, and bouquets of flowers and leaves; lace in relief. These are designed as a new ornament for dress, furniture, and fancy articles.
The novelty of this invention, which has been patented in France and Belgium, consists, first, in the application of lace of different points to the exact representation of flowers, leaves, and fruit, after nature, and of various other objects; and in the strength and solidity given to these ornaments composed of the lightest fabrics. Secondly, in guipure in relief, demi-relief, or simply raised and obtained by the same process. These may be used either separately, or set with artificial foliage, precious stones, or any other ornaments. They can also be adapted to press-point, net-work, stuffs, and fabrics of any kind as ground work.
These flowers and guipure in relief have the advantage of being very easily cleaned without in the least losing their shape. They can also, when taken to pieces, be transformed in various ways, and made to completely change their shape, so as to form a great variety of ornaments for dress.
- 269 HUE, JN. BAPTISTE, 76 *Faubourg St. Martin, Paris*—Inventor and Manufacturer.
Specimens of locks which cannot be picked or opened by false keys; exhibited for security and cheapness. Patent machine for cutting and bending at the same time hooks and eyes, made and invented by the exhibitor. Specimens of hooks and eyes cut by the machine.
- 270 HUET, Mme. A., *Rouen*, and 12 & 14 *Rue du Cimetière, St. Nicolas, Paris*—Manufacturer.
Specimens of India-rubber articles, braces, buckles, brace-ends, fancy braces, thread and cotton twists.
- 271 JACOBBER, —, 43 *Rue du Faubourg, St. Denis, Paris*—Artist.
Twelve painted plates in porcelain of Sèvres, with varied patterns of flowers, fruits, and birds, on a blue ground. The exhibitor was the designer of the two large square porcelain pictures of flowers and fruits, exhibited by the Sèvres National Manufactory.
- 272 JACQUEMART BROTHERS, *Charleville (Ardenne)*—Manufacturers.
A variety of carbines and blunderbusses.

Cremons (a new shutting piece for windows), bolts, and thumb-bits, mostly patented, and presenting the novelty of the union of cast-iron with forged iron.

Various fire-shovels, tongs, and pokers.

Improved locks, which can be adapted to any door without the aid of a locksmith.

273 JAILLON, MOINIER, & Co., *La Villette, near Paris (Seine)*—Inventors and Manufacturers.

Stearic candles. Stearic acid. Soaps. These candles are extremely white, transparent, and durable. By this process the manufacturer is able to mix, in the preparation of soap, greasy ingredients of a very inferior quality, and yet produce soaps of the best quality. The soaps are more transparent, and at the same time harder and more adhesive, and free from odour.

274 JAPUIS & SON, *Claye, near Paris*—Manufacturers.

Printed calicoes. Printed articles for furniture; and printed muslins for dresses.

275 JAPY BROTHERS, *Beaucourt (Haut-Rhin)*, and *108 Rue du Temple, Paris*—Manufacturers.

Specimens of horology, consisting of movements for clocks and watches. Hardware, wooden screws, locks, and household utensils in wrought iron.

276 JOLLY, FELIX, *Mer (Loire and Cher)*—Manufacturer.

Purified extra fine oil for watchmakers, fine machinery, and fire-arms.

277 JOLY, —, *Esternay (Marne)*, and *24 Rue du Faubourg St Denis, Paris*—Manufacturer.

Two large porcelain vases, each of a single piece, ornamented in gold and paintings, with a coloured bouquet of flowers.

278 JUHEL-DESMARES, JULES, *Vire (Calvados)*—Manufacturer.

Cloth of various fabrics and colours: Twilled beaver, double-milled and plain cloth, satined.

279 JULIEN, MARGUERITE, *au Puy (Haute-Loire)*—Lacemaker.

Blondes. Lace. Velvet-silk. Alençon silk. Florence shawl, collars, lappets, and veils.

280 KELLER, F. A. E., *40 Rue du Bac, Paris*—Hydrographic Engineer.

Double planisphere for great circle sailing, and facilitating the practice and tuition of nautical science. New invention.

281 KIRSTEIN, FREDERIC, *Strasbourg (Bas-Rhin)*—Producer.

Silver alto-relievos, executed with the punch chisel, representing groups of animals and hunting parties.

282 KNECHT, EMILE, *45 Rue de Babylone, Paris*—Wood-carver.

Large basin, carved in pear-tree wood, of a single piece, representing a female in a niche, surrounded by leaves and birds.

Large oval frame, with representation of wreaths of flowers and ribbon knots carved in oak, gilt by Picarel.

283 LACROIX & SON, *Rouen (Seine-Inférieure)*, and *23 & 27 Boulevard St. Hilaire*—Manufacturers.

Patent fulling machine, for cloths and other woollen fabrics, by continued pressure. More than 4,000 of these machines are now in full operation in France, England, Germany, and Spain.

Patent lithographic machine, by which upwards of 5,000 copies can be taken without injuring the composition.

284 LAFAYE, PROSPER, *9 Rue de l'Empereur (Barrière Blanche), Paris*—Producer.

Painted window-glass. The upper part is in imitation of the mosaic paintings of the 12th and 13th centuries. In the centre are scriptural subjects after the style of the 16th century. This specimen is represented in the accompanying Plate, 96.

285 LAHURE, —, *Havre (Seine-Inférieure)*—Inventor.

Model of a boat that immediately empties itself and which cannot be capsized.

286 LAINÉ, LABOCHE, & MAX, RICHARD, *Angers (Maine and Loire)*—Manufacturers.

Raw Angers hemp; combed hemp for power looms; hemp yarns for the warp and weft of canvass, and for shoemakers' threads; and sail canvass made of hemp, without sizing, used in the French navy.

287 LASEUVILLE, VICTOR, *17 Rue St. Croix de la Bretonnerie, Paris*—Manufacturer.

Patent machines for making seamless silk purses and watch-guards. These machines manufacture four dozen per day.

288 LANG, LOUIS, *Schelestadt (Bas-Rhin)*.

Various specimens of wire gauze, for manufactories of paper by machinery. These specimens are adapted for different descriptions of paper.

289 LANGLOIS & LECLERCQ, *81 Rue de la Harpe, Paris*—Booksellers.

Various scientific and literary works, illustrated, viz.:—*Pomologie Française; Leçons Élémentaire de Botanique; Le Plutarque Française; Traité Élémentaire de Topographie; Cours Élémentaire de Mécanique, de Chimie, d'Arboriculture et Agriculture; Exploration Scientifique de l'Algérie, Histoire Naturelle des Mollusques; Recherches de Physique sur la Méditerranée; Observations sur le Magnétisme Terrestre, &c.*

290 SLATE SOCIETY OF ANGERS, *Angers (Maine and Loire)*—Producer. (CHARLES LARIVIÈRE, *Angers*, Manager.)

Specimens of slate from the exhibitors' quarries, near Angers, exhibited for quality and purity. The Society possesses eight quarries, which are worked by 3,300 workmen, employs 23 engines of 260 horse-power, and manufactures 130,000,000 slates yearly.

[A large quantity of good slate is obtained from near Angers, the quarries giving employment to several thousands of workmen, and the supply being estimated at eighty millions of slates annually for roofing only. The quality is excellent and the dimensions large. The slate corresponds with that found in Cornwall.—D. T. A.]

291 LAROCHE, EDWARD, *10 Rue des Jeûneurs, Paris*.

Designs, for printing on various fabrics, such as barge, de laines, silk, &c.

Various designs for laces, guipure, &c.

292 LAUMAIN, CLAUDE, *15 Rue de la Tixeranderie, Paris*—Watchmaker.

Pocket chronometers of improved construction, rendering them less liable to injury from accident.

293 LAUREAU, LEONARD, *12 Rue St. Gilles (au Marais), Paris*—Producer.

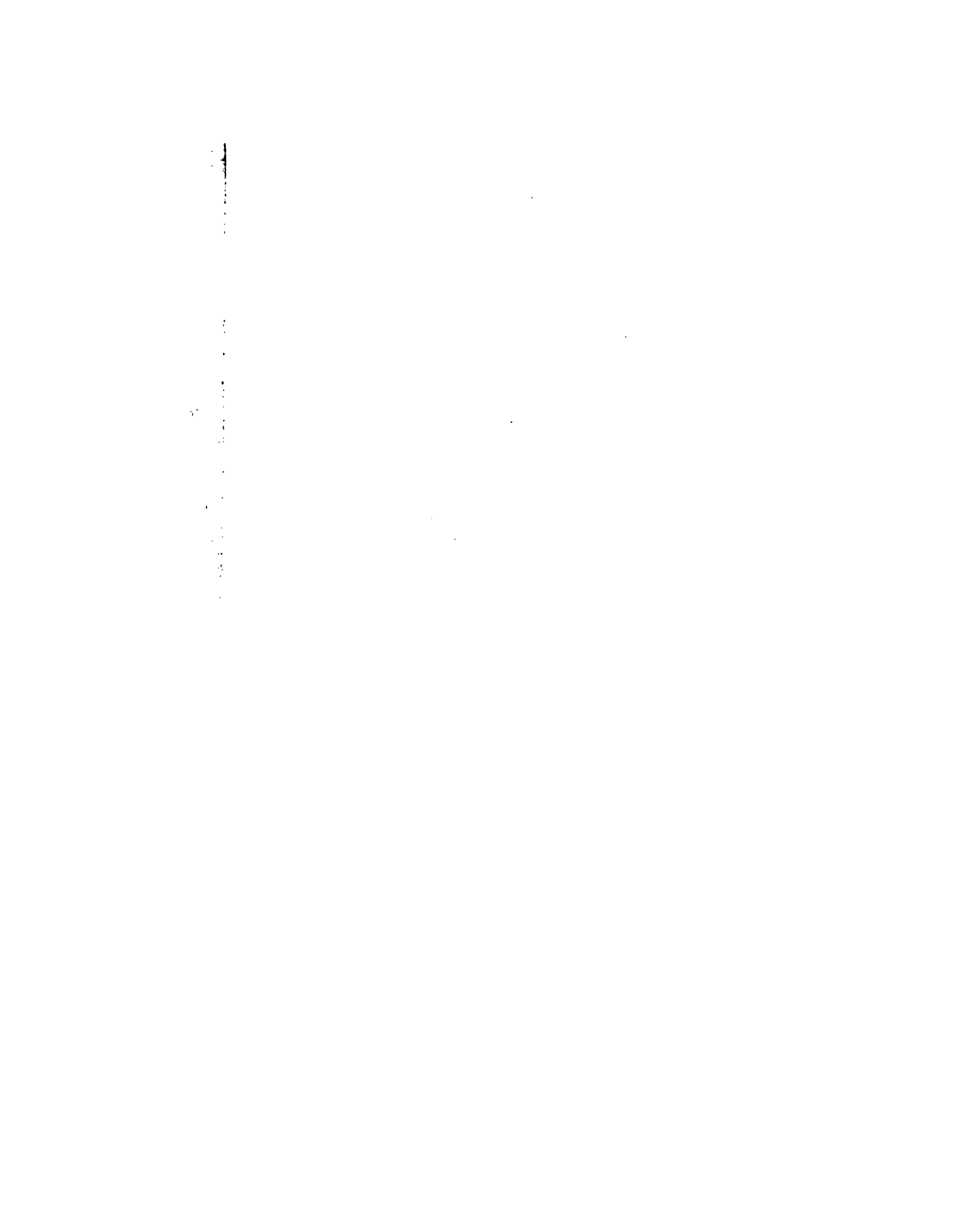
Five figures made of a galvanized compound metal of bronze and pewter, representing the Republic, Europe, Asia, Africa, and America.

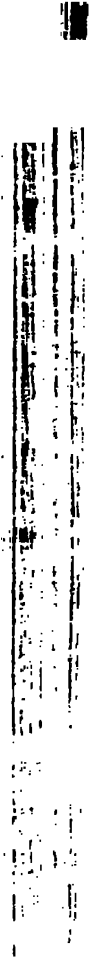
294 LAURENT, GSELL, & Co., *43 Rue St. Sébastien, Paris*—Glass-painters.

Two armorial bearings, Swiss style, of the 17th century, in coloured glass.



J. ROVIS

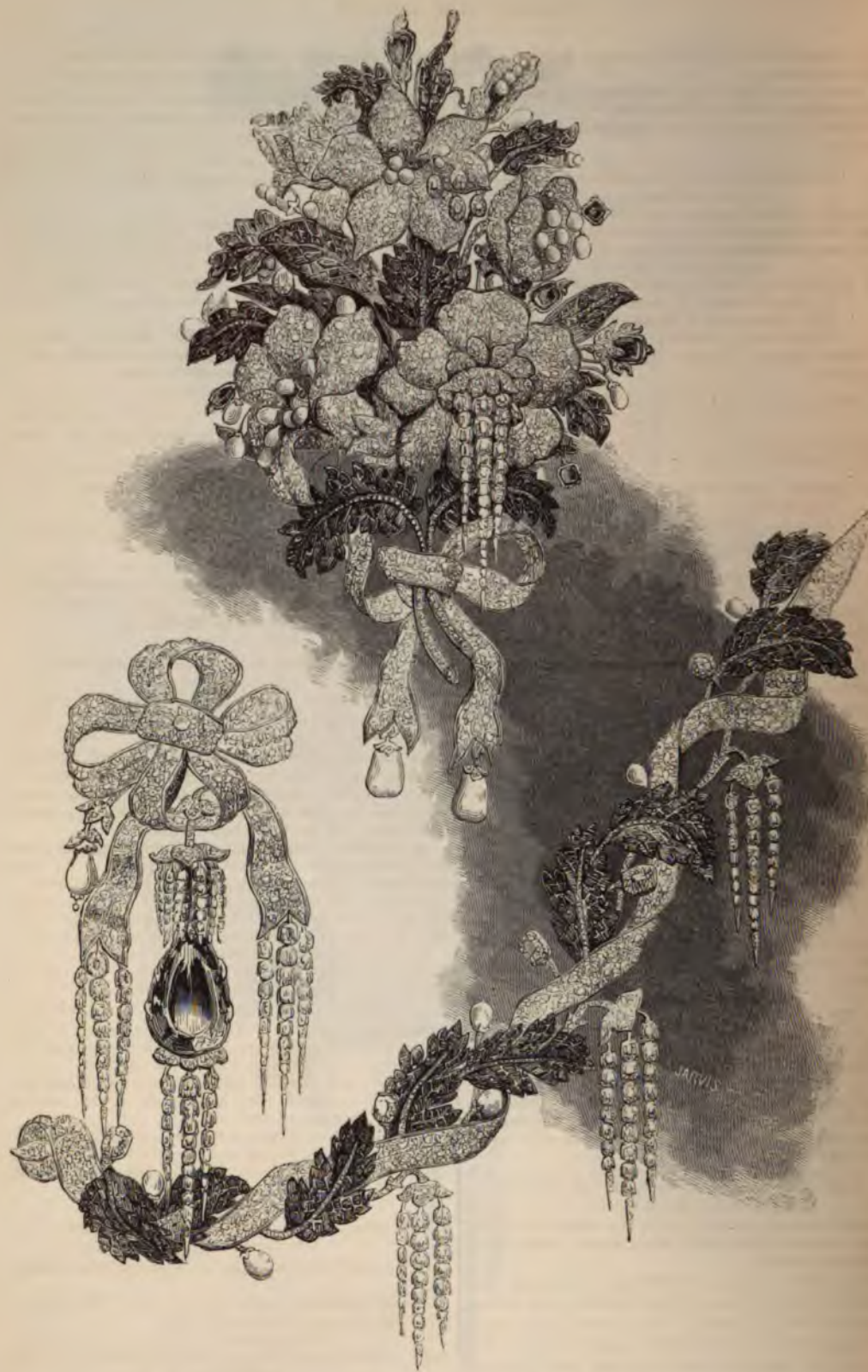






TIARA AND BROOCHES OF BRILLIANTS AND PEARLS.
THE PROPERTY OF HER MAJESTY THE QUEEN OF SPAIN.





125. BOUQUET OF BRILLIANTS AND OTHER JEWELS BELONGING TO HER MAJESTY THE QUEEN OF SPAIN.

Two painted glass windows, representing the interior of Chinese houses.

A panel in the style of the 16th century, a restoration of the celebrated windows of Ferrières.

Ornamented squares of glass, with medallions, for house decoration.

295 LAUTZ, LOUIS, 40 *Rue Montmorency, Paris*—
Ivory-carver.

Carved ivory vase, representing the battle of the Franks against the Saxons, gained by Charlemagne.

This vase is represented in the accompanying Plate 250.

296 LAYDET, SON, & Co., Niort (*Deux Sèvres*), and
37 *Rue Grenelle, St. Honoré, Paris*. (Agents,
M.M. GRAETZER & HERMANS, 3 *Huggin Lane,*
Wood Street, London.)

Chamois leather; buckskin gloves; beaver and chamois gloves.

297 LEBLANC & MILLER, *Mouville (Seine and Marne)*—
Manufacturers.

Samples of wheat-flour, of the first quality, for making bread; the produce of the district of Coulommiers.

298 LEBRUN, ALEXANDRE, 3 *Rue Chapon, Paris*—
Manufacturer. (Agent, Mr. SALOMON, 22 *Red*
Lion Square, London.)

Spectacles, telescopes, and optical-glasses.

299 LECLERC, HENRI, 105 *Quai Valmy, Paris*—
Engine-worker.

An ornamental fountain with a basin in zinc, and figures in cast-iron, painted in imitation of bronze.

A collection of jets d'eau of different forms.

Rotary and other pumps adapted for horticultural purposes.

300 LECOENTRE, —, Marine Officer, 52 *Rue St. Georges,*
Paris.

An improved sounding-lead—nautical apparatus for soundings—adopted by the French navy.

This instrument indicates the nautical depth to which it descends without the necessity of taking in sail, provided the rate of the ship does not exceed six or seven knots.

The exhibitor proposes presenting his invention to the English Admiralty after the Exhibition.

301 LEFRANÇOIS, —, 302 *Rue St. Denis, and 7 Passage*
Basfour, Paris—Manufacturer.

Sliding boxes for lucifer matches; taper-stand boxes for lucifer matches and tinder, of various descriptions, patented.

302 LEHUBY, —, 78 *Rue St. Lazare, Paris*—Chemist.

Medicinal envelopes, or lichen capsules (patented in France and England), for the purpose of containing medicines, and concealing their disagreeable flavour.

These capsules, although extremely thin and transparent, are not permeable. The mucilaginous vegetable substance of which they are composed is soluble only in water, so that the generality of medicines prescribed in small doses may be taken in them.

303 LEMOLT, ALEXANDRE EDWARD, 42 *Passage*
Jouffroy, Paris—Inventor.

Galvanic battery, constructed in the workshops of M. Loyseau, optician, Quai de l'Horloge, Paris. Patented in France and England.

[Thirty pairs of plates, in this form of battery, are stated to be equal to the requirements of five great electric telegraphic lines in France. The extent of line thus served appears to be about fifteen hundred miles. The pile is of very simple construction, and may be readily worked by otherwise ignorant persons. It is said to develop electricity of great intensity, and to be constant in its effects. In addition to its applicability to the pur-

poses of the electric telegraph, it is also adapted to the electrotype, and as a source of active electricity for various purposes. The principal peculiarity of the battery, which is a modified form of Bunsen's, appears to consist in producing a constant deposition of copper upon the upper surface of the charcoal or coke cylinder, by which the metallic contact of the metal and the cylinder is preserved. —R. E.]

Chôca, a compound of cocoa and coffee. Chôca is a genuine mixture, in various proportions of cocoa and coffee, the ingredients of which being ground, and made into a paste like chocolate, present a combination partaking of the blended taste and aroma of both these aliments.

The admixture of coffee renders chocolate easier of digestion, while the exciting properties of coffee, are in turn tempered by the addition of chocolate.

304 LEMONSIEB, —, 6 *Place Vendôme, Paris*—Jeweller.

Set of emeralds belonging to Her Majesty the Queen of Spain.

Various other articles of jewellery. These are represented in the accompanying Plates, 105 and 207.

305 LÉON, —, 7 *Rue de Crussol, near the Coulerard*
du Temple, Paris—Chemist.

Varnishes for leather, parchment paper, carvings in wood, instruments in horn, bone, and tortoise-shell, moulds in plaster and wax, tape measures, lamp shades, maps, toys, artificial flowers, metallic capsules, &c.

306 LEÓN, CLÉMENT, & BOURGEOIS, *Moret (Jura)*—
Manufacturers.

Turnspit with weight, winder, and bell to give notice five minutes before the weight is quite down. This article can turn about 85 lbs.

Patent turnspit, with spring and bell, and perpetual winding key. This key has the advantage, that no injury arises from continuing the winding after the spring is wound up, the key turning on itself by a patent mechanism. It can turn about 33 lbs.

An eight-day clock, striking and repeating the hours and quarters, with lever escapement, jewels in six holes and alarm. Frame with gilt engraved brass columns.

An eight-day travelling clock, striking and repeating the hours and quarters. Arnold escapement, jewels in six holes, alarm and calendar, in plain gilt brass frame.

Regulating time-piece, going a month, with dead seconds, stop escapement, pendulum compensation, with enamel dial and copper circle, in a varnished deal case.

An eight-day clock, with a circle of wrought copper, Graham's escapement and dead seconds; its weights plated with polished brass, striking the hours and half hours, repeater, alarm, and balance pendulum.

An eight-day clock, striking the hours and quarters, with alarm, enamel dial, and copper circle, polished copper pendulum, and brass weights.

An eight-day clock, polished brass works, lever escapement and seconds hand, striking the hours and half hours, and repeating, seven branches balance, enamel dial, and weights in polished brass.

307 LEPEURDEIEL, —, 25 *Rue des Martyrs, Paris*—
Chemist and Druggist.

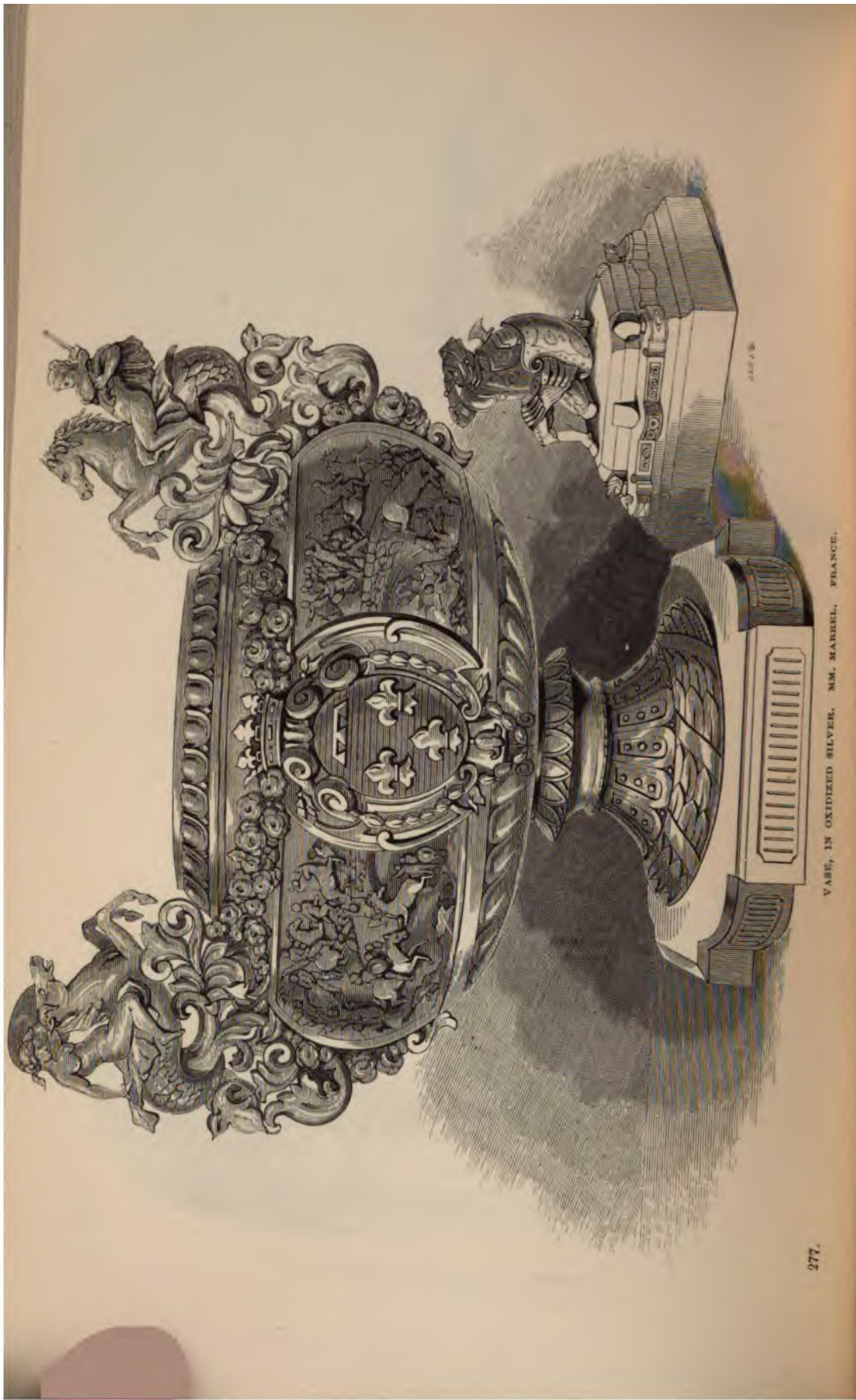
Pharmaceutical caoutchouc for dressing blisters, issues, &c.

Elastic stockings, made of caoutchouc, for various venal affections of the extremities.

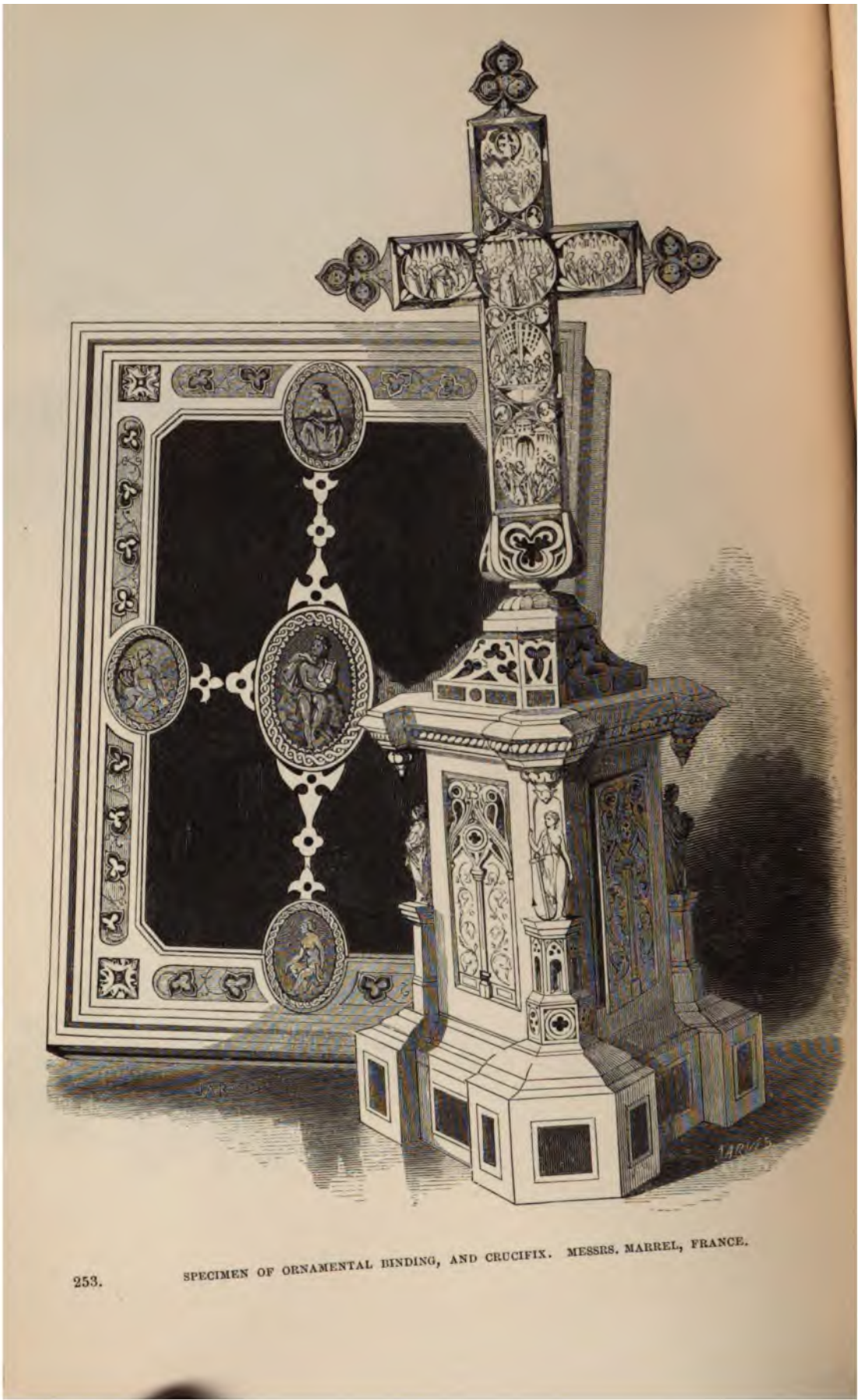
308 LEROUX, —, *Vilry le François (Marne)*—
Producer.

Bark of the willow tree: balsam
Chemical productions capable of being employed for dyeing



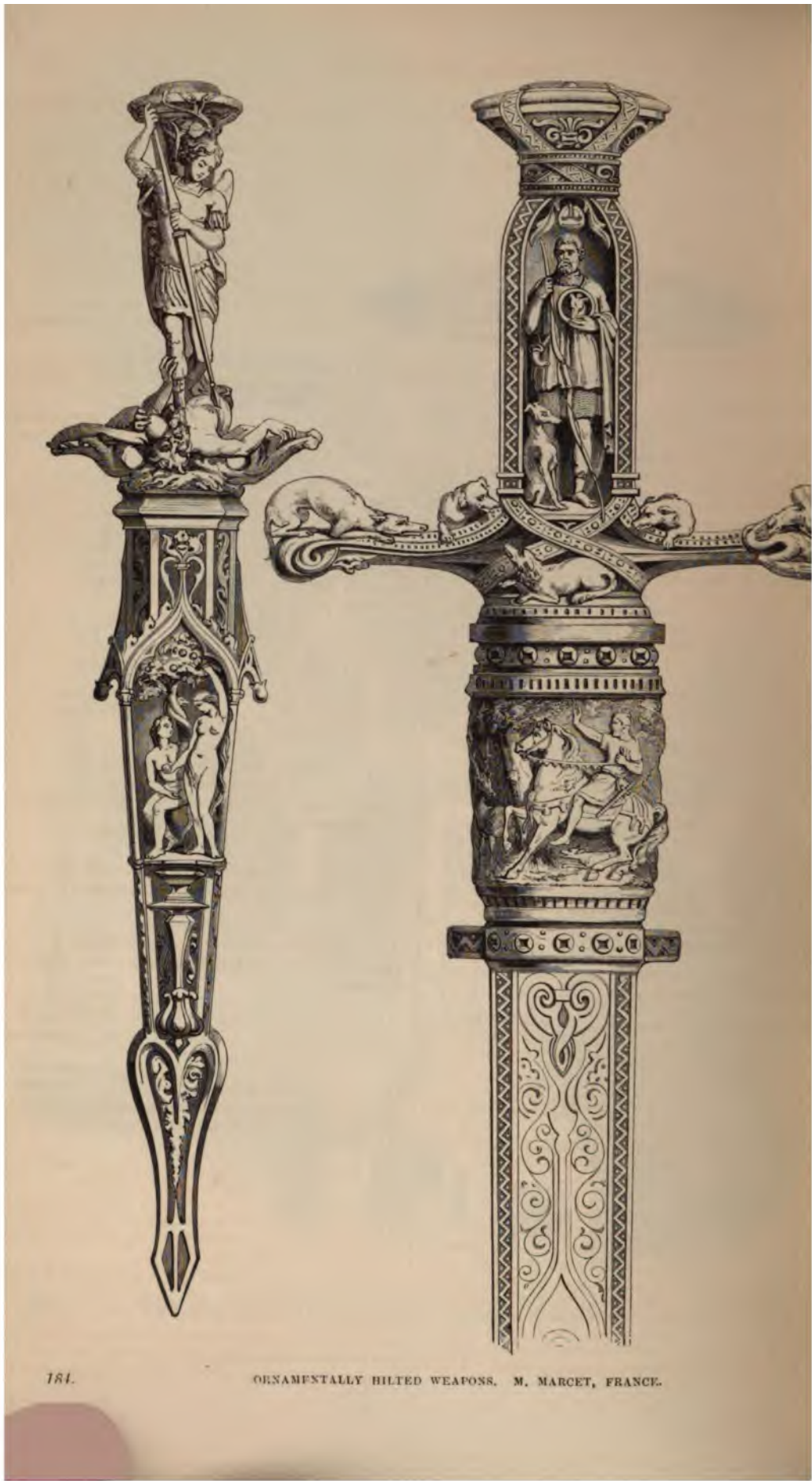


VASE, IN OXIDIZED SILVER. MM. MARREL, FRANCE.



253.

SPECIMEN OF ORNAMENTAL BINDING, AND CRUCIFIX. MESSRS. MARREL, FRANCE.



al is free from smell during its combustion, and is
uses preferable to common coal.

LADER BROTHERS, 1 *Rue de Montreuil, Paris*—
Manufacturers.
mens of stained paper-hangings.

LOBICEAUX & CAYeux, *Mouy (Oise)*—Inventors
and Manufacturers.

it pendulum-regulator, adapted for an hydraulic
over of one hundred-horse power : applicable to
s of flood and sluice-gates, without derangement
machinery. It is capable of being fixed with great
so as to guarantee a period of six hours as the
period during which it will be necessary to stop
to which it may be attached.

MARÉCHAL & GUYNON, *Metz (Moselle)*—
Glass Painters.

ed glass-window :—1. St. Charles administering
munition to the plague-stricken : (glass-work of the
h century). 2. A burgomaster. 3. A rose (of the
th century).

MARÉCHAL, *JULES*, 82 *Rue du Faubourg St.*
Martin, Paris—Engineer.

ines for mincing and mixing meats, soups, pastes,
stables. Patented. Especially adapted for sausage-
and pastry-cooks

MARREL BROTHERS, 27 *Rue Choiseul, Paris*—
Silversmiths and Jewellers.

vase, gilt and oxydised, and adorned with
es, representing the battle of the Amazons, after
 . A book in ornamental cover and crucifix.

rup of these objects is represented in the Plate, 253.
ing-case, cups, hunting-knives, dagger, and other
i silver articles. Some of these are represented in
e.

MARSAUX & LEGRAND, 14 *Rue de la Perle,*
Paris; and 27 *Castle Street, Holborn, London*
—Manufacturers.

ressed brass ornaments for cornices and the deco-
f rooms.

ces on velvet in imitation of papier-maché work.
garland of flowers, struck in one piece.

cornices, stamped on a single piece of metal.
process employed is an improvement on the old
of embossing, as it dispenses with joints and
gs.

sortment of mouldings, cornices, ends for poles,
bands, and cast holders.

MARSSING BROTHERS & Co., *Luttelange (Moselle),*
Lyons, and *Tarare (Rhône)*—Manufacturers.
(Agents, **HUBER & Co.**, 2 *Rue de Braque, Paris*.)
lush for hatters.

MARBY, **BERNARD**, & **Co.**, *Prouzel, near Amiens*—
Manufacturers.

us sorts of papers, for envelopes, pamphlet-covers,
, writing, printing, drawing, hangings, &c.

MARHARDENG —, *Angers*—Manufacturer.
ron pianofortes, of a novel construction.

MARPIGEZ & CHAZELLE, 83 *Rue Richelieu, Paris*—
Manufacturers.

us articles of dress for ladies : rich Lyons silk-
ered fabrics. Shawl, the texture of needle-work,
itation.

MARPAGET, **JOS. A.**, *Beziers (Hérault)*—Clock-maker.
system of spring-box watch, called "Paget's"
Patented.

338 **PAILLART BROTHERS**, 17 *Rue du Grand St. Michel,*
Paris—Tanners and Curriers.

Calf-skins and sheep-skins for covering cylinders, in
spinning-mills; cow square hides for wool and cotton
cards; plates and ribbons for wool and cotton cards
(ready for use); rubbers for spools of equalised buff for
spinning wool; muffs for mechanical combing; and straps
for machinery.

339 **PAPAVOINE & CHÂTEL**, *Rouen (Seine-Inférieure)*—
Engineers.

Patent card-making machine.
Cards of various sorts in leather and felt cloth.
Patent card-ribbon, for cotton and wool spinning-
machines.

340 **PARADIS, DE RUOLZ, & Co.**, 6 *Faubourg Poissonnière,*
Paris; and **MM. DEVAUX & Co.**, 62 *King William*
Street, London

Specimens of waterproof painting, by a new process
invented by Ruolz, chemist. Patented in France and
England.

341 **PARDOUX**, —, *Randon (Puy de Dôme)*—Engineer.

Ploughs, with fore-carriage and fixed mould-board,
large size, entirely of iron, possessing the following ad-
vantages :—It allows of a deep incision without deviating
from the perpendicular line; economises the labour of
the animals, and is less fatiguing to the labourer, who
has only to direct the team, and to turn the plough at the
end of the furrow.

Smaller plough, and similar to the above.
Plough, with moveable mould-board and fore-carriage,
available to the most uneven lands; and, on turning the
mould-board at the end of the furrow, the labourer is
enabled to return by the same line.

Plough, with moveable mould-board, single wheel, and
double handle. Various other ploughs, all of which, with
these, are patented.

342 **PAUWELS, A.**, 179 *Faubourg Poissonnière,*
Paris—Inventor.

Regulator and moderator : machines for regulating the
flow and pressure of gas.
Fireproof retort for gas-works. Patented.

343 **PERRON, E.**, 14 *Rue Vivienne, Paris*—Manufacturer.
Various samples of chocolate, manufactured by a new
process.

344 **PESCHELOCHE-VIVIN**, —, *Epernay (Marne)*.

Clocks, watches, and various clock-works, with new
movements.

345 **PETIT, SON, & Co.**, *Nantes*—Manufacturers.

Mill-stones, suitable for grinding wheat, in general use
in the west of France.

347 **PICARD, E.**, 3 *Rue de Lenôtre, Rouen*—Designer.

Designs for woollen, cotton, and other printing; white-
ground design, chintz fashion, with portrait of the Queen
of England.

348 **PICAULT, GUSTAVE FRANÇOIS**, 46 *Rue Dauphine,*
Paris—Inventor and Manufacturer.

Patent oyster-opener, with which a child can open 10
oysters per minute; saw-edged carving knife, of superior
temper and edge; shear-knife, for carving poultry; and
various articles of fine clasp cutlery.

[The shear-carving knife, the oyster-opener, and the
saw-edged carving-knife, are useful inventions. The
first article is chiefly intended for cutting up fowls at
table; and, as its name denotes, it unites a carving-knife
and scissors in one instrument; so that what cannot be
easily separated by the knife, can be cut through by the

scissor part without mangling the fowl. The second article consists of an apparatus like a nut-cracker, which on one leg holds the oyster, and on the other a sharp chisel to cut the bivalve joint; by pressing the legs together, the oyster is instantly opened. The saw-edged carving-knife will, from its construction, cut through bones and meat, without giving the carver the trouble occasioned by the ordinary carving-knife.—R. W.]

349 PICHOT, A., 20 *Place d'Armes, Poitiers* (*Vienne*).

Imitation of marquetry, and inlaid work on thick and thin ivory. A new invention.

[This process is stated to be applicable to all the requirements of the art of producing marquetry and inlaid works, and is more easy of execution and of adaptation to uneven surfaces.]

350 PIERRET, —, 21 *Rue des Bons Enfants, Paris*—
Clockmaker.

Globe-clock, according to the latest discoveries. New system of alarm-clocks. Portable alarm-watches.

351 PILLAUT & CO., 3 *Rue Vienne, Paris*—
Manufacturers.

Elastic and orthopedic dress, belt, and stays.

352 RENOARD, JULES, & CO., 6 *Rue de Tournon, Paris*—
Booksellers,

Various publications connected with history, science, fine arts, education, bibliography, political economy, &c.

353 REYNIER, Cousins, *Lyon (Rhône)*, and 19 *Rue Puits*
Gaillot—Manufacturers.

Silks for neckerchiefs, shawls, scarfs, dresses, and parasols.

354 RICHER, FRANÇOIS, *Gouvix (Calvados)*—
Producer.

Two fleeces of rams of a pure breed, two years old.

355 REISS, MARTIN, *Dieuze (Meurthe)*—Manufacturer.

Samples of gelatine and isinglass used in the preparation of textures, silk stuffs, clearing of wines, &c.

356 BIETRY & SON, 102 *Rue Richelieu*—Manufacturers.

Broché and embroidered shawls; cachmere for dresses.

357 ROBERT, ADOLPHE, *Sancerre (Cher)*—Clockmaker.

New repeating system for watches and clocks. Patented.

358 ROJON, JEAN LEOPOLD, 51 *Quai Valmy*,
Ruelle des Lilas, Paris.

Prepared and improved emery, used in polishing plate-glass, lenses, polished steel, cutlery, fire-arms, precious stones, mechanical instruments, &c. Prepared emery-paper and artificial emery stone. Impalpable emery powder, used in polishing Daguerreotype plates.

Venetian and French tripoli, pumice and rotten-stone. Impalpable colours, ground by a mechanical process.

Specimens of colours for painting on porcelain and enamel, requiring much delicacy.

359 ROULET, GILLY, & CHAPONNIERE, *Marseille*
(Bouches du Rhône)—Manufacturers.

Palm-oil soap, for bleaching cloths, dyeing silk, &c.

360 ROUSSEAU, LOUIS, 12 *Rue des Cinq Diamants*,
Paris—Manufacturer.

Various preserved fruits.

361 ROUSSEL, CHARLES, *Besançon (Doubs)*—
Manufacturer.

Music composed with moveable types, and matrices of the types.

362 ROUXEL, FREDERIC, *St. Brieux (Côtes du Nord)*—
Agriculturist.

Prepared flax, employed in hand and power looms.

363 RUEZ, LOUIS, *Cambrai (Nord)*—Starch-maker.

Various samples of starch.

364 SAGET, —, 17 *Rue Sainte Elisabeth, Paris*—
Lamp-maker,

Light-house for the navy; flash-pipes, with parabolical reflector. Lantern for hydraulic crane; other lighting apparatus.

365 DE SANDOVAL & CO., *Tarbes (Hautes-Pyrenées)*—
Manufacturers.

Various specimens of chocolate, manufactured by water-power.

366 SANSON, EDMOND, *Evreux (Eure)*—Manufacturer.

Samples of ticking for stays, feather-beds, and furniture.

367 SAURAUX, JEAN VINCENT, 21 *Faubourg du Temple*,
Paris—Manufacturer.

A billiard table, in black wood, engraved in the bull style, supported by four caryatides in copper; in the middle of each large side, there is a head, with various ornaments in fruits, designed and executed by the manufacturer. This billiard table is not altered by change of temperature, the wood being dried by a new patent method.

368 SAVARY & MOSBACH, 2 *Rue Vaucauson Mardi*
St. Martin, Paris—Jewellers.

Imitations of diamonds, precious stones, and massive pearls.

369 SEIREAUX, —, *Rue sur le Prince, Paris*—
Manufacturer.

A machine, of great delicacy, for the equal measurement of a straight line. It is principally adapted for philosophical experiments relating to the expansion of liquids in articles.

370 SCHMAUTZ, C., senior, 5 *Rue du Cherche, Paris*—
Manufacturer.

Various descriptions of leather and of rollers for lithographic printing, for copper-plate printing, and of plating rollers for engravers.

371 SCHOENENBERGER, —, 28 *Boulevard Poissonnière*,
Paris—Producer.

Index of the concerts of the national conservatory of music. Classical catalogue for pianists and actors.

372 SEGUY, —, *Thezan (Hérault)*—Engineer.

Wheel-plough.

373 SÉNÉCHAL, —, 41 *Rue des Solitaires, Belleville*,
near Paris—Engine-worker.

Hemming machine, suitable to the sewing of coarse linen cloths.

Machine for cutting gloves, made of skin or other materials. Patented.

374 SILBERMANN, GUSTAVE, *Strasbourg (Bas-Rhin)*—
Inventor and Printer.

Letter-press of various descriptions, executed by a new process.

A frame containing a portion of a window of Strasbourg Cathedral, drawn to the 20th of its original size, by Mr. Baptiste Petit-Gérard, glass-painter at Strasbourg, and printed in colours under the direction of the exhibitor.

All the impressions in colours are produced entirely by typography, without being retouched.

A frame containing a church window of smaller size, copied and drawn by Mr. Klein, painter at Strasburg, eight ornamental drawings, by Mr. Toudouze.

A frame containing 12 different subjects, printed in colours.

A geological map, the text of which has been engraved on stone, and the tints printed by the typographical press.

Six drawings of old German military costumes, engraved on wood, and printed in colours. The skies of these drawings, and the wall behind the life-guards, are new applications of typography.

An interior, printed in imitation of sepia.

A Gothic window, representing in its upper part a church-window, with the armorial bearings of printers; the lower part of it showing a view of the Cathedral of Strasburg, and several other monuments of that city.

Two works in quarto, and one in octavo, printed in colours and embellished.

Various boxes of French soldiers, printed in oil colours, and mounted upon pasteboard as toys for children.

5 SIMONET, Mlle. VIRGINIE, 161 *Rue St. Jacques*, Paris—Producer.

Copy, on porcelain, of Mr. Ingre's portrait of L. Chevalier.

6 BOUXWILLER MINES JOINT STOCK COMPANY, Mr. CHARLES HENRY SCHATENMAN, Manager, Bouxwiller (*Bas Rhin*).

Purified and common alum; sulphate of iron; Prussiate of potassium; Prussian blue; glue; ammoniacal solutions. Products of the working of a mine of zinc schist. From this schist are manufactured, annually, 2,200,000 lbs purified and common alum, and 60,000 lbs. vitriol of iron. The production of chemicals amounts annually to 880,000 lbs. prussiate of potash, blue and red; 44,000 lbs. Prussian blue; 132,000 lbs. glue; 22,000 lbs. white phosphorus; 88,000 lbs. ammoniac; 680,000 bone black in grains and powder.

7 JOINT STOCK COMPANY OF THE PAPER MILLS OF SOUCHE (*Vooges*), Mr. MAUBAN, Agent, 5 *Rue du Pont de Lodi*, Paris—Manufacturer.

Various sorts of writing, painting, hanging, test, and water papers; imitation of India paper.

8 THE SLATE COMPANY OF RIMOGNE, AND OF ST. LOUIS-SUR-MEUSE, Producers.—A. MOREAUX, Registrar.

Various samples of Rimogne slates, and grey slates Deville.

The slate quarries of Rimogne, after having been worked during many ages, are, at the present day, the deepest in France. The vein of the present dyke in which this slate formation occurs is the thickest that is known. These strata are the result of tertiary labours, especially those carried on at the present dyke, present mining operations carried on upon a scale of the most interesting and remarkable character. Besides these quarries in Rimogne, the Society possesses, at Beville, the slate works at St. Louis-sur-Meuse, one of the most ancient along the course of the Meuse. It is an establishment which has given its name to that variety of slate called the "Grand St. Louis."

The slate of Rimogne, which is of a beautiful azure colour, is remarkable for its tenacity and strength. It does not become disintegrated, or decaying through the action of time, it acquires, by exposure in the open air, increased hardness and consistency; its surface becomes more compact and polished; and upon being struck, it emits a clear metallic sound, indicating a property or texture such as is not possessed by slates of ordinary quality, for those emit an earthy sound.

It is ascertained, that when slates, well adapted for manufacture, are quarried from great depth, they are all found to be of quality superior to that exhibited

by slates that have been dug under different conditions of depth, &c. This is the case in other localities, and especially so in Anjou. Some prejudices exist on this subject which requires to be noticed. In that portion of the Department de l'Aisne, bordering upon Belgium, no slates are either known or seen but those of Pamay. On the confines of the Department de l'Aisne, and throughout all those portions of that department which are situated on the Oise, as far as the river l'Aisne, we meet with the grey slate formations of Beville. These, in their turn, supply the Department of the Marne. At some particular spots the three kinds of slates are found all united. At Qaux, they employ no other description of slates but those of Angers.

It is found that the slates quarried in the Department of Ardennes is not inferior in point of beauty, or in the good properties of any other slate; that, at the same time, the slate of Rimogne has in certain respects a degree of superiority; the rock which produces it being extracted in masses of a more homogeneous structure, exhibits a more sparry cleavage, and promises a much higher degree of hardness.

This Society manufactures annually 35,000,000 of slates of various descriptions: its slates are used for government buildings.

[The slates from Rimogne and other places in the Ardennes are of fine quality, and often extremely crystalline. They underlie the whole carboniferous series of Belgium, and are probably of Devonian date. They are a good deal used, and extend for some distance.—D. T. A.]

379 OURSCAMP SOCIETY, PEIGNÉ DELACOURT, Manager, (*Oise*), 14 *Boulevard Poissonnière*, Paris—Manufacturers.

Samples of thick calicoes (called long cloths and Wigans) woven by hand.

380 SEHNÉE BROTHERS, 17 *Rue des Vinaigriers*, Paris—Manufacturers.

Various sorts of varnish, for leathers, wood, and metals, and for oil and water-colour paintings.

Natural flowers preserved by a chemical process.

381 SOINS and SON, *Esquermes-les-Lille (Nord)*—Dyers.

Linen twills dyed and satined; cotton twills dyed and glazed, by a new patent process.

382 STEINBACH, J. J., *Petit Quevilly, near Rouen*, (*Seine-Inférieure*)—Manufacturer.

Samples of starch, fecula, and gums, chiefly used in print-works.

383 STEINER, CHARLES, *Ribeauville (Haut-Rhin)*—Manufacturer and Printer. (Agents in London, J. S. DE GAETAN & Co., 8 *Bow Lane, Cheapside*.)

Plain cotton fabrics, dyed Turkey red; shawls and handkerchiefs of the same colour, with white ground, and several colours introduced. Exhibited for the brightness and harmony of the pattern, and the richness of the dye.

384 STURM, PIERRE HENRY, 28 *Rue de l'Ancienne Comedie*, Paris—Artist.

Paintings on enamel:—

The Virgin, with a green cushion, painted in the Louvre, after the original by Andreas de Solario.

Æneas relating to Dido the disasters of the City of Troy, painted in the Louvre, from the picture by Peter Guerin.

Virgin, from Raphael, the original picture of which long formed a part of the gallery of the Palais Royal, and which now belongs to the Marquis of Stafford, London.

Virgin, taken from the Assumption of Murillo, contained in the Spanish gallery in the Louvre.

Florist, whole length, from Greuze.
Shepherdess carrying a basket of flowers, from Fragonard.

Nosegay of dahlias. Nosegay of roses, tulips, &c.

385 TAILBOUIS, E., 15 Rue des Mauvaises-Paroles, Paris—Manufacturer.

Silk chenille scarf; point lace; head dresses; square handkerchiefs; embroidered shawls; and stockings for children.

Silk half-hose; taffety and half silk gloves; embroidered gloves; long mitts, and tulle in gold.

Thread taffetas, Scotch thread, and wool beaver gloves; gaiters and half gaiters.

Wool knitted scarfs, and childrens cloaks. Wool and silk knitted children's and ladies' cloaks; net cloaks, scarfs, and head-dresses.

386 TAILFER, J. B., 9 Rue St. Etienne, Batignolles (Seine)—Inventor.

Patented dynamometric machines, to ascertain the amount of horse-power of steam-engines. Inventor and patentee, M. Taurines. Patented in France and England.

387 TAILLANDIER, LOUIS HENRY, Evreux (Eure)—Manufacturer.

Various sorts of tick for bedding and stays.

388 TAMBOUR-LEDOYEN, 49 Rue Neuve St. Augustin, Paris—Manufacturer.

Gloves cut and manufactured on a new plan, Privat's, which imparts a perfection and regularity to the article not previously attained.

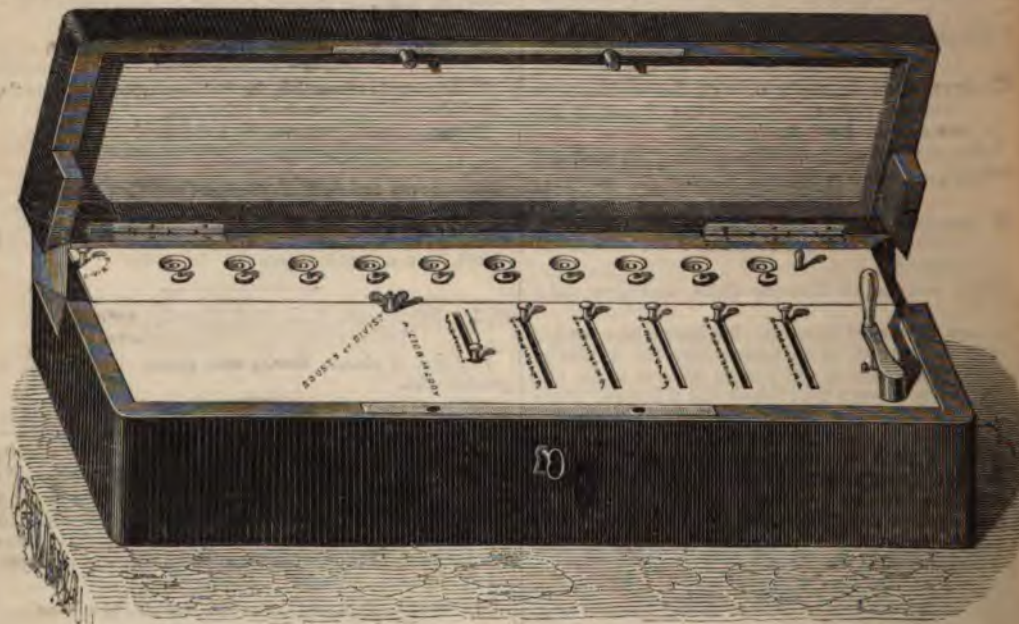
389 TELLIER, —, 122 Grande Rue, Dieppe (Seine-Inférieure)—Ivory Carver.

Various specimens of carved ivory.

390 THOMAS, CHARLES XAVIER, Colmar, and 13 Rue du Helder, Paris. (Agent, M. DE FONTAINE MOREAU, 4 South Street, Finsbury Square.)

Arithmometer, a machine for performing arithmetical calculations. Invented by the exhibitor, and patented in France and Great Britain. This apparatus is represented in the cut below.

[This apparatus appears to be intended for performing operations in the four common rules of arithmetic. It is not unlike an arrangement similar to that of Napier's rods or bones. The "Rabdologia," or book containing the description and use of these rods, was published in 1617, three years after the "Canon Mirificus Logarithmorum," a work which changed the face of Europe as to arithmetical calculations, and the value of which can never be superseded by any new invention. The rods were made of bone, ivory, or wood, and had their faces divided into nine little squares, the latter being diagonally divided into two triangles. In these were written the numbers of the multiplication table, so that the units were in the triangle on the right, and the tens in that on the left. By arranging these rods with the hand, according to certain rules, the common operations of arithmetic were performed; and by the application of a little ingenious machinery, it is easy to see how by turning a handle, the same manipulation could be effected, and the same results obtained. The calculations proposed to be effected by Professor Babbage's machine were of a much higher order.—B.W.]



Thomas's Arithmometer.

391 THIERRY, CHARLES ALPHONSO, 301 Rue St. Honoré, Paris, and 278 Regent Street, London—Manufacturer.

Various specimens of shoes and boots, with moveable and revolving-heels, invented by Mr. Walker, of Birmingham, and patented in France and England.

These heels are of a round shape, and revolve upon themselves, so as to place every point of their surface suc-

cessively in the spot where the wearer is accustomed to wear it most. They are moveable by the hand without the help of any instrument. They completely avoid the deviation from the level, invariably produced by a few days' wear, and not only keep the level of the heel perfect, but also that of the entire boot or shoe.

This plan, in which the heel is composed of two round pieces of leather joined by a very light metallic ring, is so

simple that it may be worked by any manufacturer. It does not increase the weight of the boot or shoe, and combines durability of the heel, and the saving of repairs, with the advantages of preserving the primitive shape of the boot, and preventing the foot from falling on either side.

394 TREMAUX, PIERRE, *Charcey, near Bourgneuf (Saone and Loire)*—Architect.

Patent improved harmonium, lessening at pleasure the sonorosity of the low notes.

395 DU TREMBLAY, ALEXIS, *3 Rue de Milan, Paris*—Inventor.

Drawings upon various objects made of Dutch ware, porcelain, or crystal, obtained by a patent process.

396 TRICOT BROTHERS, *25 Rue Stanislas, Girardin (Seine-Inférieure), Rouen*—Manufacturers.

Hand-loom fabrics composed of various materials, such as cotton, wool, thread, or silk; cotton fabrics, and various fabrics for exportation.

397 TUDOT, —, *Moulins (Allier)*—Designer.

Lithography after the black style. New process.

398 TULOU, —, *27 Rue des Martyrs, Paris*—Manufacturer.

Improved flutes, with a key in C, in which are introduced important modifications. The keys are arranged so as to enable the player to produce correctly and with ease certain generally defective notes. The springs are of gold and never require oiling.

399 ACKLIN, *36 Rue Bourbon Ville-neuve, Paris*—Machine-maker.

Jacquard loom, with an apparatus for the substitution of the pasteboard of the Jacquard cards (patented in France and England); diagram representing the details of the apparatus.

400 ALBINET, JUN., *19 Rue de la Vieille-Estrapade, Paris*—Manufacturer.

Woollen, merino, and cotton blankets and counterpanes of every kind.

401 ARCHAMBAULT, A., *124 Rue St. Lazare, Paris*—Carver and Frame Maker.

Specimens of mouldings. Frames of various kinds, fluted and plated.

402 ARNAVON, H., *Marseille (Bouches du Rhone)*—Manufacturer.

Various samples of soap for exportation.

403 AUBERT & NOEL, *265 & 267 Rue St. Honoré, Paris*—Manufacturers.

Samples of brandy, made of alcohol and fruits of various kinds, by distillation in a vacuum, viz.:—Peach, raspberry, apricot, strawberry, white or red currant, black currant, mulberry, greengage, white damson, black damson, plum, and sweet cherry.

In this manufacture, about 200 lbs. of these fruits yield nearly seven quarts of black cherry brandy, having the flavour of prussic ether.

These brandies may serve as the basis for all compositions of fruit tafias, without prejudice to the delicacy of the flavour. The brandy has the taste and flavour of the fruit. It is mild, and destitute of the burning taste common to wine brandy. Pure or mixed with water it is an agreeable drink, and may from its variety of taste and flavour advantageously replace other spirituous mixtures.

The liqueurs prepared from these various sorts of brandy, are called marasquin, on account of their analogy to those of Venice and Trieste. They are manufactured

from the fruit of a variety of laurels (cherry bay), called in Italy Marasca.

The distillation in vacuo, deprives the mixture of the coarse essential oil, which remains after ordinary distillation, and which contains the resinous and heterogeneous substances, so disagreeable to the palate and injurious to the stomach. The distillation in vacuo is carried on at from 40° to 50° of temperature instead of 120° to 150° in the ordinary process.

The marasquin, from the wild or brandy cherry, is a cephalic. The cherry is tonic and mild. The peach approximates to the cherry. The strawberry is diuretic, and beneficial in phthisical complaints and weak constitutions. The raspberry is cooling and antiscorbutic; mixed with water, it is a sweet and agreeable beverage. The flavour of the black currant is very superior, and the operation of the vacuum instead of weakening, concentrates the properties of the fruit.

404 AUCHER, —, *44 Rue de Bondy, Paris*—Manufacturer.

Two upright pianofortes, the one with oblique strings and fixed finger-board, the other with vertical strings and moveable finger-board. A new iron bar for upright pianofortes, not affected by the changes of the weather, and suited for exportation.

405 AMULLER, E. F., *53 Rue du Faubourg Poissonnière, Paris*—Manufacturer.

Model of a roof covered with an improved species of tile.

The tile in question is flat, and the edge by which it is encircled opens at the bottom in order to admit of a free egress for the rain water. The inner edge, which is shaped like a horse-shoe, occupies the upper part of the tile. These two edges correspond with the wedgings which the tile has on its reverse side, so that by covering the upper part of its surface with two other tiles placed side by side, the two edges are wedged in and entirely covered by the two upper tiles, and nothing is seen of the under tile but the arrow-head of the lower part, which allows the water to run on to the under tile. As the jointing of the two tiles is always covered by the upper one, and as the wedgings of the edges are very correct and tolerably deep, it is impossible for the snow or rain to penetrate through these jointings, or to be driven by the wind through the divisions of the wedgings.

406 BAILLIÈRE, J. B., *19 Rue Hautefeuille, Paris*—Bookseller.

Illustrated volumes on medical science and natural philosophy, with coloured plates. Natural History of Molluses, by Ferussac and Deshayes, with coloured plates.

407 BAILLY, COMTE, & SON, *Mores du Jura*—Manufacturer.

A travelling-clock, striking the quarters, and going for 30 hours.

408 BALLY, P., *25 Rue Notre Dame de Nazareth, Paris*—Manufacturer.

Clocks of various sizes and descriptions. Watch and clock movements.

409 BAPTEROSSES, JEAN FELIX, *27 Rue de la Muette, Paris*—Manufacturer.

Specimens of porcelain knobs of every kind.

410 BARRAL, C., *Ganges (Hérault)*—Silk Throwster.

Samples of raw and thrown silk, white and yellow.

411 BASELY, —, *11 Rue Constantine, Paris*—Manufacturer.

Stands for portable watch and clock movements.

412 BATAILLER, AUGUSTE, P. E., *au Chateau du Portail, near Montargis (Loiret)*—Manufacturer.
Specimens of agricultural implements.

413 BAUCHET, VERLINDE, *Lille (Nord)*—Manufacturer.
A machine to rule paper on both sides at the same time.
Account-books for commercial purposes.

414 BAYARD, HIPPOLYTE, *81 Rue de la Paix à Batignolles (Seine)*—Producer.
Seventeen photographic drawings contained in three frames.

[These photographs are "prints," to use a recognised term among calotypists, from glass negatives. They represent views of buildings, architecture, &c., statues, and bas-reliefs. They have not been touched by the artist after having been fixed. The sharpness of outline of proofs obtained from glass negatives, and the freedom from a certain woollyness of texture inseparable from proofs obtained from paper negatives, afford a certain recognition of them.—R. E.]

415 BAYRET BROTHERS & Co., *Choisy-le-Roi, dépôt in Paris, 16 Rue Mauconseil*—Manufacturers.
Specimens of common and morocco leather.

416 BAZIN, ARMAND, *au Mesnil St. Firmin (Oise)*—Manufacturer.
A draining plough.

417 BORIE, BROTHERS, *24 Boulevard Poissonnière, Paris*—Inventors and Patentees. (Agent in London, EDWARD ELLIOT, 33 Bucklersbury, Cheapside.)

Machine for making tubular bricks, drain-pipes, tiles, &c.
The tubular bricks made by this machine are exhibited for strength, lightness, impermeability to damp, noise, cold and heat, their facility for taking any required forms and dimensions, and cheapness of construction.

They are distinguished from the ordinary hollow bricks by being formed of a series of small hollow tubes, each tube being separated only by a very thin layer of material.

They are formed by means of a machine to which are fitted several forms of dies, capable of producing bricks of any section, these dies being constructed on a new principle. The preceding cuts represent different kinds of bricks made by the exhibitors' patent machine. Fig. 1, a brick of ordinary size; fig. 2, a double brick, called a stretcher; fig. 3, a double brick, called a header; fig. 4, a quadruple brick, of wall breadth. The bricks can be manufactured of any kind of clay, plastic marl, or loam mixed with clay; and if material be used containing stone, large sand or gravel, or pieces of lime, the machine separates them with ease. In use, they present as much resistance to perpendicular and transversal pressure, as the common bricks: they are rendered more dense and hard by the perfect and uniform baking and burning, which they undergo, in consequence of the heat passing through the hollow tubes, and thus acting on all parts of the brick.

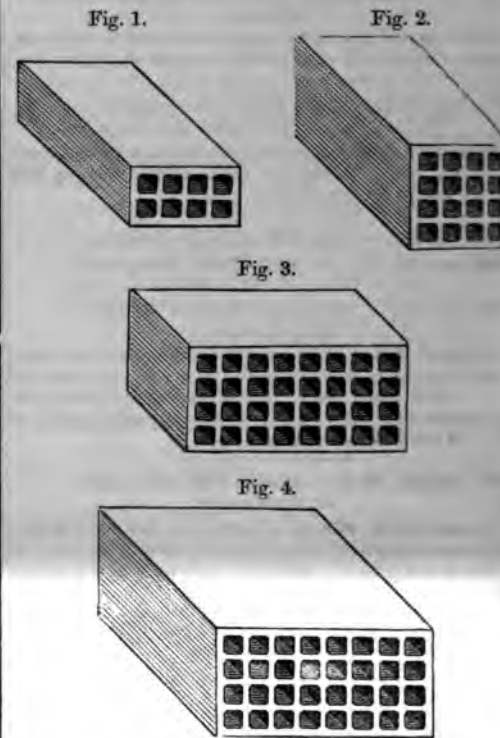
The tubular bricks are very light compared with the common bricks of the same size and material: they never weigh more than 50 per cent. of the common bricks, and they are particularly adapted for the construction of dwelling-houses, partitions, roofs, furnaces, vaults, chimneys, &c.

As non-conductors of sound, heat, cold, and damp, they will be found greatly superior to common bricks, as they permit the air to circulate through the walls. In summer, houses built with them would be cooler, in winter warmer, and at all times drier.

The tubular bricks can be made by the machine of any given shape, section, or dimensions, from the ordinary size up to eight or ten times that size, and thus can be used as large stones, an advantage which cannot be

obtained with common bricks, in consequence of the expense of baking, and the danger of fusing the clay.

The tubular bricks can be made from 15 to 40 per cent. cheaper; the expense of moulding being one-fourth, of material, one-half; of baking, nearly the same; and of carriage one-half. There is also a saving of half the time and ground necessary for drying. The machine is portable and can be worked by steam, horse, water, or hand power; the latter being preferable as it is more easy and less expensive to move the machine to the place containing the material, than the material to the machine. One person can mould from 3,000 to 4,000 bricks of ordinary size per day.



The machine also produces drain-pipes and roof-tiles, of all shapes and sizes, which are of superior quality, in consequence of the pressure to which the clay is subjected, and the separation of foreign material by the machine.

418 BERGER, FRANÇOIS, *St. Etienne (Loire)*—Manufacturer.

Fancy fowling-pieces of various kinds.

419 CLESINGER, T., *32 Rue de Penthièvre, Paris*—Sculptor.

Statue of a bacchante in marble.

420 BERNARD, —, *34 Rue Constantine, Paris*—Machine-maker.

A filtering machine.

421 BERNARDEL, SEBASTIEN, PHILIPPE, *21 Rue Croix des-Petits-Champs, Paris*—Manufacturer.

Two bass-violoncellos, two altos, and three violins; with bows. After the first masters, viz., Amati, Stradivarius, Joseph Guarnerius, and Maggini.

422 BERTHELOT, NICOLAS, *Croyes (Aube)*—Inventor and Patentee.

Circular knitting frame on a new principle to overcome the difficulties in the manufacture of hard or slightly

flexible materials by the ordinary circular or rectilinear knitting frames. By this frame cotton, flax, hemp, wool, silk and even iron wire can be manufactured into thread with great facility. It is said to produce, with fine materials, a superior fabric to those manufactured by the ordinary means.

In this loom the sinker wheel is omitted, and its place supplied by a circle or ring which regulates the motion of the sinkers. As soon as the thread enters, the sinkers retain it in the loop of the needles, until after the passage of the presser wheel, and do not leave it until the moment when the mesh, pushed off by the pushers, falls over the lower mesh. It is thus that a regular forming of the meshes is produced. Each mesh being taken, held, and released successively, the hardest and least flexible materials cannot escape from the loop of the needle until the mesh is formed. It also permits of the needles being placed close together, and the construction of frames of a very fine gauge.

The frame is furnished with a counter, which indicates the number of turns. On the circumference of the frame may be placed 1, 2, 3, or 4 sets of working parts; and thus 1, 2, 3, or 4 meshes may be made on each needle at each revolution. The machine makes one revolution per second.

424 BESSON, G. A., 7 Rue des Trois Couronnes, Paris—Manufacturer.

Cornet-à-piston, in brass and silver.
Ophicleide, harmony trumpet.
Alto, violoncellos, and a double bass.

425 BÉZAULT, JULES, & Co., 18 Rue des Vinaigriers, Paris—Machine-makers.

Hydro-extractor on a new plan, provided with break and disengager, and capable of revolving 2,000 times a minute. The machine is self-lubricating, very simple and easy to set; it will dress, in a few minutes, without injury, all kinds of materials, cloths, felts, &c.

A horse gin crane, a ventilator and pumps, with continual motion. An apparatus for making gaseous waters either in large or small quantities. Distillatory apparatus; durable gear and cushions of vegetable and animal matter for diminishing friction.

426 BODIN, J., Rennes (Ille and Vilaine)—Manufacturer.

Four ploughs and a harrow.

427 DE BOISSIMON, C., Langeais (Indre and Loire)—Manufacturer.

Ornamental vases. Stoneware articles. Fire-bricks.

428 BOLAND, ANTOINE, 52 Rue St. Louis, Paris—Inventor.

A mechanical kneader for the use of bakers, and adapted for washing, &c.

429 BONNAL, VICTOR, & Co., Montauban (Tarn and Garonne)—Silk Throwster.

Raw silk, white and yellow, spun by steam. Pieces of unbleached silk for bolting flour.

430 BONTEMS, —, 80 Rue de Cléry, Paris—Manufacturer.

A bronze clock surmounted with mechanical birds.
Group of mechanical birds.

431 BOUBON, LOUIS AMOND, 16 Place de la Madeline, Paris—Inventor.

A hand or horse mill, in which the upper stone is stationary, with its bolting apparatus.

432 BOUDON, DE ST. AMANS, Lamarque, near Agen (Lot and Garonne)—Manufacturer.

New process for the application of vitrifiable colours to chinaware, and all ceramic substances hardened and enamelled by fire.

433 BOULONNOIS, —, 48 Rue St. Sebastien, Paris—Manufacturer.

Artistical bronzes of various patterns, &c.

434 BOURGOGNE, JOSEPH, 2 Rue d'Arcole, Paris—Manufacturer.

Microscopic preparations, transparent and opaque, forming 30 series of objects in connexion with physiology, anatomy, pathology, hygienic substances, secretions, &c. Vegetable organic structures. Comparisons of fabrics and mode of production. Detections of commercial frauds. Mineral-crystallization, natural and artificial; organized fossil bodies; characteristics of the different earths, &c.

435 BRAQUENIE & Co., 16 Rue Vivienne, Paris—Manufacturers.

Patent carpets, screens, and table-covers. Aubusson carpet, without seams, and with a perfect pattern on each side. Tapestries for curtains, not requiring any lining, the pattern being the same on both sides; they are particularly adapted to doorways or other places where two curtains would otherwise be necessary.

436 BRETON BROTHERS, & Co., Pont de Clair, near Grenoble (Isère)—Producer.

Two bundles of paper, with drawings.

437 BRICARD & GAUTHIER, Woincourt (Somme), and 3 Rue Pavée, St. Sauveur, Paris—Manufacturers.

Various articles of locksmiths' work, and fluted cylinders for spinning manufactories.

438 BRIÈRE, ADRIEN, 24 Boulevard Beaumarchais, Paris—Manufacturer.

Samples of arsenical acid; Scheele's green, &c.

439 BRIET, JEAN CLAUDE, 22 Rue Neuve St. Jean, Paris—Inventor and Patentee.

Apparatus for the instantaneous manufacture of soda-water, lemonade, aerated wines, and other gaseous liquids.

440 BRISSET, EUGÈNE, 13 Rue des Martyrs, Paris—Machine-maker.

Improved iron lithographic printing press.

441 BROCOL, ACHILLE, 18 Rue Charlot, Paris—Manufacturer.

Ornamental clocks, medallions, and various objects in bronze, marble, &c.

442 BUFFET, jun., 4 Rue du Bouloi, Paris—Manufacturer.

Clarionets, on an improved principle; flutes, oboes, and bassoons, for military bands.

443 BURON, —, 8 Rue des Trois Pavillons, Paris—Manufacturer.

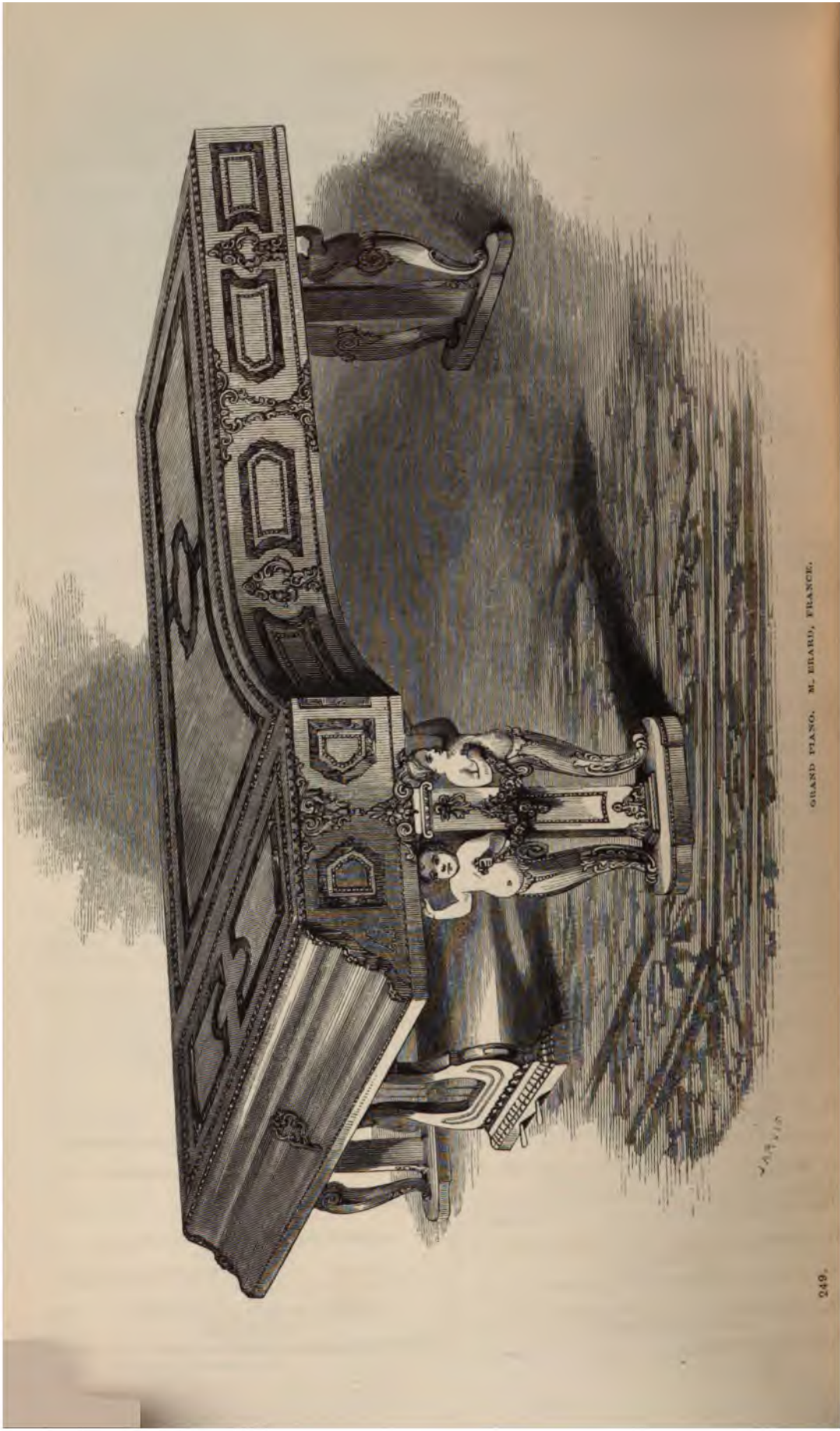
Optical and mathematical instruments; telescopes, of various shapes and sizes; telegraphic and marine telescopes; astronomical telescopes, of various novel and improved constructions; opera glasses, plain, double, and cylindrical; geodesical and nautical instruments; microscopes and achromatic lenses, mounted for Daguerreotypes, of different sizes.

444 CAFFORT, J., Carcassonne (Aude), and at Rue Neuve St. Jean, Paris—Marble-cutter.

Samples of marble from Languedoc.

[The marbles of Languedoc are extremely varied, and include many of unusual beauty and good quality. Good colours and texture, hardness, magnitude of slab, and other qualities required for valuable marble are not often combined more perfectly than in some of the specimens here exhibited.—D. T. A.]

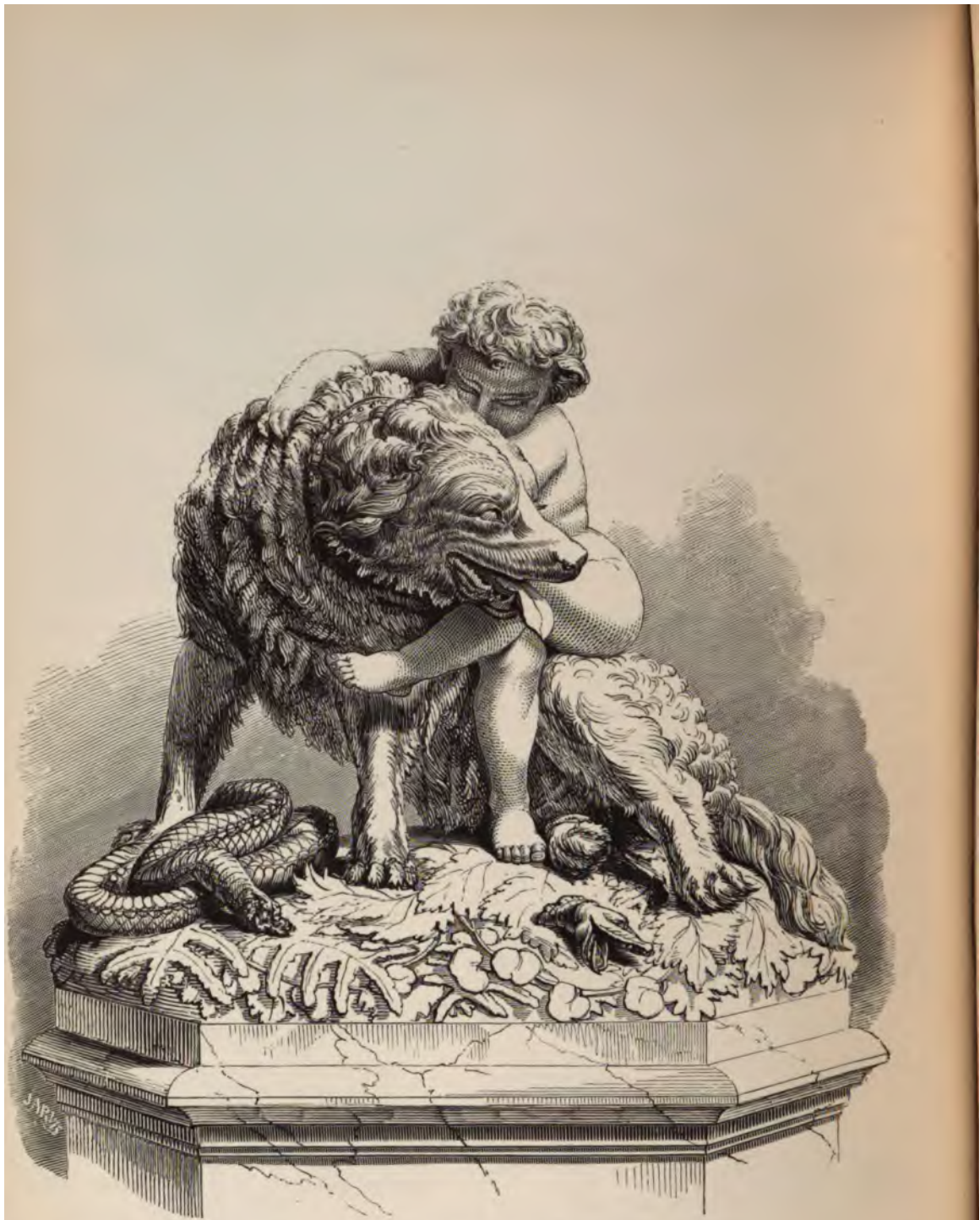
- 445 **CARRÉ, L.**, 43 *Rue Beaubourg, Paris*—
Manufacturer.
Bronze, miniature, and daguerreotype frames.
- 446 **BANCE, JUN.**, 27 *Rue Croix des Petits Champs, Paris*—Publisher.
"Architecture Mécanique," a work illustrated by examples of buildings, given in detail, and measured to a scale.
"Encyclopédie d'Architecture," a work in which the best architectural models are selected, and faithfully exhibited. Collection of architectural engravings, published under the direction of M. Calliat, architect.
"Le Louvre," by M. Duban. "La Bibliothèque Ste. Généviève," by M. L. Labrousse.
- 447 **LEROUX, —**, *Mainquet, Nantes (Loire-Inférieure)*—
—Producer.
Specimens of the distillation of salt water.
- 448 **CHAPOT & SELON, au Figanilliers (Gard)—
—Producer.
Lithographic stones, from the quarries of Vigan.**
- 449 **CHAUVIN, G.**, 10 *Rue des Gravilliers, Paris*—
—Manufacturer.
Purses, purse trimmings, clasps, &c.; buckles, trinkets, and other polished steel articles.
- 450 **CHAVIN, SEN.**, *Moren du Jura (Jura)*.
Various specimens of clock-making; pendulums and regulators. An enamelled dial. Varnished tin cases for clocks and regulators.
- 453 **CHAUVERONNIER, H.**, *St. Germain, Laval (Loire)*—
—Manufacturer.
Various specimens of lace and fancy articles.
- 454 **CLAIR, GODEFROY**, 63 *Rue Montmartre, Paris*—
—Manufacturer.
Wooden and silver flutes on different systems. Patent Boehm flutes.
- 455 **CLEMENT, BOURGEOIS LÉON**, *Moren (Jura)*—
—Manufacturer.
Specimens of watch and clock works. Kitchen jacks.
- 456 **CLOET, CHARLES**, *Lille (Nord)*—Manufacturer.
Pearl and unshelled barley. Vermicelli, of various qualities. Macaroni (an imitation of the Neapolitan). Carolina rice. Wheat flour.
- 458 **COLLETTA-LEFEBVRE**, 9 *Rue Mandar, Paris*—
—Manufacturer.
Various snuff-boxes, in tortoiseshell, maple, palm-tree, and petrified wood, mounted with gold and other substances. Amateur snuff-boxes, with gold ornaments, Gothic characters, portraits, &c. Purses; cigar and needle-cases, &c.
- 459 **COMBET, —**, 6 *Rue Grenetat, Paris*—Manufacturer.
Harmonic strings in silk and catgut for violins.
- 460 **CORDIER, CHARLES**, 5 *Rue Carnot, Paris*—
—Sculptor.
Bust in bronze, on a column, a negro from Timbuctoo.
- 461 **CORNIGUEL, CHARLES**, *Vannes, Morbihan*—
—Manufacturer.
Various kinds of leather.
- 462 **COURNERIE & Co.**, *Cherbourg (Manche)*—
—Manufacturer.
Iodine of potassium, sublimated iodine, chlorure of potassium, sulphate of potassium, &c.
- 463 **COURTOIS, —, SEN.**, 28 *Rue des Vieux Augustins, Paris*—Manufacturer. (Agent—J. S. DE GAETAN, 3 Bow Lane, Cheapside.)
Musical instruments in brass, with curvilinear pistons, allowing the free passage of the air: bass, bugles, trombones, new horn, French horns, cornets, and double basses.
- 464 **TOUSSAINT, EUGÈNE NICOLAS**, 4 *Rue de la Susseine, Paris*—Designer.
Design for a lace scarf.
- 465 **CRESPEL, DELLISSE**, à *Arras (Pas-de-Calais)*—
—Agriculturist.
Various samples of wheat. Sowing machine.
- 466 **CROUILLIER, JN.**, 31 *Rue de Cléry, Paris*—Designer.
Designs for stuff printings.
- 468 **CUSSON, POURCHER, & ROSSIGNOL**, *Clermont Ferrand (Puy de Dôme)*—Manufacturers.
Patent pistol, muskets, &c.
- 469 **CUVILLIER, H.**, SEN., 16 *Rue de la Paix, Paris*.
Specimens of preserved food: Mussels, oysters, mushrooms, peas, and truffles.
- 470 **DARRAS, PAUL**, *Tirin (Côte-d'Or)*—Manufacturer.
Specimens of materials employed in silk manufactories.
- 471 **DAUPHINOT, PERARD**, *Isles sur Suippes (Marne)*—
—Manufacturer.
Merino fabrics of all colours, manufactured for Mr. F. Pascal, Paris, and for Messrs. Bradbury, Greatorex, and Beale, Aldermanbury, London. Dyed by Mr. Francillon, of Puseaux.
- 472 **DELACOUR, HENRI PARFAIT**, 47 *Rue Vieille du Temple, Paris*—Manufacturer.
Specimens of horse-hair and vegetable silk fabrics.
- 473 **DELVIGNE, GVE.**, 24 *Rue du Boulay, Paris*—
—Machine-maker.
Portable howitzer; priming-horn; and an apparatus for salvage.
Delvigne's shipwreck projectile is composed of a hollow wooden cylinder, which contains a line carefully rolled up. It is projected by a gun or howitzer, and during its flight towards the wrecked vessel the line inside unrolls itself. This apparatus may be used from the shore to the vessel, from the vessel to the shore, or, at sea, from one ship to another. It may be carried and managed by a single person, and is not costly. The charge of powder is two ounces; the range, three hundred yards; with larger sizes the ranges are much longer.
- 474 **DAVAL, —**, 17 *Rue de Cléry, Paris*—Upholsterer.
Decorations for apartments, and furniture.
- 475 **DETIE & Co.**, 162 *Rue du Faubourg St. Denis, Paris*—(Piano Workmen Society).
Upright pianoforte, with semi-oblique strings. Upright pianoforte, with vertical strings.
- 476 **DEYEUX, —**, *Liancourt (Oise)*, and at 7 *Rue Garancière, Paris*—Manufacturer.
Fire-proof crucibles for melting copper, pure iron, steel, and other metals. Various chemical utensils.
- 477 **DOMENY, L. JOS.**, 101 *Faubourg St. Denis, Paris*—
—Manufacturer.
Specimens of harps. Upright pianofortes.
- 478 **DONNEAUD & Co.**, 190 *Quai de Jemmapes, Paris*—
—Manufacturers,
Stearic acid; oily acid; light-house candles.



GRAND PIANO. M. EBARD, FRANCE.

- 479 DOREY, JULES, *Hâvre (Seine-Inférieure)*—
Machine-maker.
A clock-dial, illustrative of a new system of lighting. These dials, during the daytime, appear black, and show the figures in white; but at night, when the interior of the clock is illuminated, the figures become luminous, as also the hands of the clock, and the time is thus readily discerned. Several public dials have been illuminated on this principle, in Paris and Hâvre.
- 480 DUBREUILLE, DERVAUX, LEFEBVRE, & DE FITTE, *Wagner le Grand (Nord)*—Manufacturers.
Samples of beet-root sugar.
- 481 DUBUS, sen., 58 *Route de Caen, à Rouen (Seine-Inférieure)*.
Four cylinders for grinding emery.
- 482 DUCOMMUN, —, 28 *Boulevard Poissonnière, Paris*—Producer.
A fountain-charcoal filter, with a new kind of tap. A box containing a pressure charcoal filter. Patent travelling canteen in pewter, with charcoal filter.
- 483 DUFOUR, LOUIS, *Boulevard Beaumarchais, Paris*—Manufacturer.
Gilt, silvered, and fancy paper, manufactured by machinery.
Burnishing stones and plates for every species of gilding.
- 484 FORTIN, BOUTELLIER, *Beauvais*—Manufacturer.
Specimens of fine cloth, and felted cloth for pianofortes.
- 485 DUFOUR, JN. BTE., *Saumur (Maine and Loire)*—Producer.
Samples of causeways in asphaltic stones, composed of bituminous substances. Samples of natural and artificial bitumen for macadamising. Mosaic-work in natural stones, united together by asphaltic mastich.
[The use of asphalt in paving originated in France, and has been carried out more completely there than in England. The material is obtained from several places in France, of which Obsann (Bas-Rhin), Parc (de l'Ain), and the Puy-de-la-Poix (Puy-de-Dome), were for some time the chief. In these cases the bituminous matter was obtained from limestone; but of late very large quantities have been found at Bastenne, in the south of France, about 15 miles north of Orthez. The bitumen here occurs in a bed from 10 to 15 feet thick, with occasional thick layers of shells. Above and below it are sands. When fresh, this bitumen is easily cut, and is then purified by boiling in a large quantity of water two or three times, and allowing the sand to settle at the bottom. After a few days' exposure, it becomes incapable of purification on account of the hardness having increased so much. In using it, the bitumen is boiled with sand and pebbles.—D. T. A.]
- 486 DUMAS, ANTHELME, 272 *Rue St. Honoré*—
Manufacturer.
Specimens of various gas-burners.
- 487 DUMERÉY, —, 45 *Rue des Petits Ecuries, Paris*.
A machine employed in the manufacture of shoes, &c. Plates for engraving music.
- 488 DUMONT, FRANÇOIS LS. HRL., *Douai (Nord), Rue des Wetz*—Tanners.
Strong leather from Buenos Ayres.
- 489 MONTIGNAC, —, 6 *Rue Beauregard, Paris*—
Goldsmith and Jeweller.
Specimens of jewellery.
- 490 DUNAIME, J. A., 18 *Rue Lepelletier, Paris*—
Producer.
A four-wheeled carriage, of the description called Town-Berline. This carriage is represented in the illustration on the next page.
- 491 DUNDOY, MAILLARD, LUCQ, & Co., *Maubeuge (Nord)*—Manufacturers.
A variety of articles of general ironmongery. Tools and portions of spinning apparatus for all descriptions of spinning, both in wool, flax, cotton and silk.
[The establishment represented by these exhibitors is one of great extent and importance. A large number of artizans are connected with it; and the quantities of raw material used annually are very great. The greater portion of the articles exhibited are for home use, but others are exported to Belgium, Italy, Spain, &c.]
- 492 DUPRAT & Co., *Castres (Tarn)*—Manufacturers.
(Depôt, 1 *Rue du Grand Chantier, Paris*).
Corks cut by machinery on a system patented in England under the name of Mr. De Boissimon. Cork-plates cut by machinery.
- 492A FUNSTENHOFF, EMMA, 17 *Rue de Choiseul, Paris*—Manufacturer.
Artificial flowers for the study of botany.
- 493 DUPRÉ, ANDRÉ GEORGE, *Arcueil (Seine)*—
Manufacturer.
Metallic capsules for corking bottles.
- 494 DURANTON, J. B., 11 *Rue St. Joseph, Paris*—
Manufacturer.
Cotton and linen yarn fabrics for shirt-fronts. Patented in France and Great Britain.
- 495 DUVELLEROY, PIERRE, 17 *Passage Panorama, Paris*—Manufacturer.
Specimens of fans of various kinds, carved and painted, &c. One of these ornamental fans is exhibited in the cut on page 1203.
- 496 D'ENFERT BROTHERS, *Plaine d'Ivry, Deux Moulins, near Paris (Seine)*—Manufacturers.
Various sorts of gelatine. Applicable to the arts, to manufacturing flowers, to the preparation of fabrics, lithography, &c., as well as to various cooking purposes.
- 497 ERRARD, PIERRE, 13 & 21 *Rue du Mail, Paris*—
Manufacturers.
Pianofortes of various patterns. Carved pianoforte. This instrument is represented in the annexed Plate, 249. Harp, from an invention patented in England.
- 498 ERNOUX, C. H., 9 *Passage Ste. Avoye, Paris*—Hatter.
Fancy felt-hats, with and without ornaments, manufactured by a new process.
- 499 ESPRIT & NOYÉ, F., 42 *Quai de Retz, Lyon (Rhône)*—Manufacturers.
Drawing of a regulator for hosiery manufacture. Gloves and stockings, manufactured by means of this regulator.
- 502 FAUQUIER, LOUIS FELIX, 7 *Rue Bourg-Labbé, Paris*—Manufacturer.
Toilet brushes of all kinds for exportation to America. Glass windows of inlaid rosewood, composition pearl, and tortoiseshell.
- 503 FÉLIX, J., 64 *Rue Rambuteau, Paris*—
Manufacturer.
Flat purses; cigar, blotting, and surgical-instrument cases, and embroidery, mounted in velvet and morocco.
- 504 FERON, J. F., 29 *Rue de Clichy, Paris*—
Manufacturer.
Bannisters, with ornamented handrails.

- 519 **GREVELOT & LEMAIRE**, 30 *Notre Dame des Victoires*, Paris—Manufacturer.
Caps for percussion guns.
- 520 **GERVAIS**, 3 *Rue des Fossés St. Jacques*, Paris—Manufacturer.
Patent copper boiler with a copper grate. Pipes with double effect, and ventilation with returning columns.
- 521 **GILLET, AUGUSTE**, *Knevel (Morbihan)*—Manufacturer.
Sardines preserved in oil.
- 522 **GILLOT**, —, 8 & 10 *Rue du Chevalier du Guet*, Paris—Lithographic Printer.
Three frames containing typographical impressions, with their stereotypes. Patented in France and Belgium.
- 524 **GOFFINET, SALLE, JEAN BAPTISTE, TOUSS, & Co.**, *Reims (Marne)*—Wool-spinner.
Carded wool-spinning:—Hair; wool and cotton; all wool; woollen and cashmere,—of various colours.
- 525 **GOURDIN**, —, *Mayet (Sarthe)*—Manufacturer.
A clock, striking the quarters; adapted for country mansions or palaces.
- 526 **GROSSOT & Co.**, *Place du Collège, Lyon (Rhône)*—Manufacturers.
White damask thread table-napkins, or cloths. Complete table-services.
- 527 **GREY, M.**, *Dijon Côte-d'Or*—Manufacturer.
Various samples of mustard.
- 529 **GROSSE BROTHERS**, 29 *Quai Napoleon*, Paris—Manufacturers.
Aerometers, for liquids in a dense or diluted state. Chemical utensils, such as crucibles, capsules, spoons, &c.
- 530 **GROULT**, —, jun., 16 *Rue St. Apolline*, Paris—Manufacturer.
Specimens of pastes and flours for soups.
- 531 **GROULT & Co.**, 7 and 9 *Rue Frépillon*, Paris—Manufacturers.
Various kinds of copper tubes.
- 532 **GUEUVIN-BOUCHON, & Co.**, *Laferté sous Jouarre, (Oise)*—Manufacturers.
Specimens of millstones, whole and in pieces.
- 533 **GUEROT, A.**, *Elbeuf (Seine-Inférieure)*—Dyer.
Samples of wool dyed in various colours, and used in the manufacture of broad-cloths.
- 534 **GUILLOT, J. J. A.**, 17 *Rue de Bouloy*, Paris—Manufacturer.
Shoes, &c., and tanned leather.
- 536 **HENRY, CLAUDE**, 21 *Côte St. Sébastien, Lyon, (Rhône)*—Machine-maker.
Steel combs, for weaving silk and cotton stuffs.
- 537 **HERME**, —, *Crest (Drôme)*—Silk Throwster.
Samples of raw and thrown silk.
- 538 **HEBRESCHMIDT, GUSTAVE FRANÇOIS**, *Strasbourg*—Manufacturer.
Boot-legs. White and japanned calf leather.
Calf-skins. Sewn straps.
- 539 **HEYLER, Mdlle. MARY**, 3 *Rue de l'Ecliquière*, Paris—Manufacturer.
Various mittens and gloves.
- 540 **HILDEBRAND, A.**, 202 *Rue St. Martin*, Paris—Manufacturer.
Chimes of bells for churches and belfreys. Tuning forks for orchestras.
- 541 **HUCK**, —, 31 *Rue Corbeau*, Paris—Manufacturer.
A complete apparatus for grinding alimentary substances, in wrought or cast iron, or brass.
- 542 **HUSSON, F. C.**, 13 *Quai de la Tournelle*, Paris—Manufacturer and Inventor.
Patent transparent cloths for the reproduction of drawings, maps, and plans.
- 543 **IMLIN, FREDERIC**, *Strasbourg (Bas-Rhin)*—Veterinary Surgeon.
Plaster casts modelled from nature, representing club-foot of horses both before and after the operation.
- 544 **NATIONAL PRINTING OFFICE**, *Paris*.
A volume exhibited as a specimen of printing, and three geographical maps. Copies of ancient missals and manuscripts.
- 545 **JACQUET, ROBILLARD**, *Arras (Pas de Calais)*—Manufacturer.
Double sowing machine, adapted to sow small beans, wheat, barley, oats, rye, red beets, and corn in general; it can be adapted to any plough or sowing engine, and is exhibited for its simplicity and cheapness, and is easily repaired.
This instrument consists of a cast-iron disc, containing eight movable distributors, which are made, by means of a key, to take from one to twenty-five grains, as required; these distributors turn round in a small wooden frame, surmounted with a hopper, capable of containing from 12 to 15 pints of corn. A board, adapted to the hopper, permits the distribution of either a large or small quantity of seeds.
The whole apparatus is laid upon the back part of the binot (or plough); a wheel, adapted to the back of the plough relieves the draft of the horses, and transmits movement to the distributor. A glazed slip board, which may be shut while it rains, allows the sower constantly to see the process of sowing, so that he cannot leave a blank.
- 546 **JACQUIN, JOSEPH JULES**, *Troyes (Aube)*—Manufacturer.
Patent circular looms. Samples of cotton, and woollen and cotton fabrics.
- 547 **JACQUOT**, —, *Nancy (Meurthe)*.
Violins, tenors, and violoncello.
- 548 **JAMIN**, —, 71 *Rue St. Martin*, Paris—Manufacturer. (Agent, M. de FONTAINE MOREAU, 4 *South Street, Finsbury*.)
Four large mirrors; opera-glasses, microscopes, &c.
- 549 **JEROME BROTHERS**, *Amiens (Somme)*—Machine-makers.
A machine for winnowing buck-wheat.
- 550 **GOURDAN, A.**, 3 *Rue Neuve, St. Eustache*, Paris—Manufacturer.
Brocaded worsted shawls and Cashmere shawls.
- 551 **JOSSELIN, JEAN JULIEN**, 37 *Rue Louis-le-Grand*—Staymaker.
Stays of every kind. Improved mechanism for remedying defects of every kind in the figure.



232.

GROUP IN PLASTER. M. LECHESNE, FRANCE.

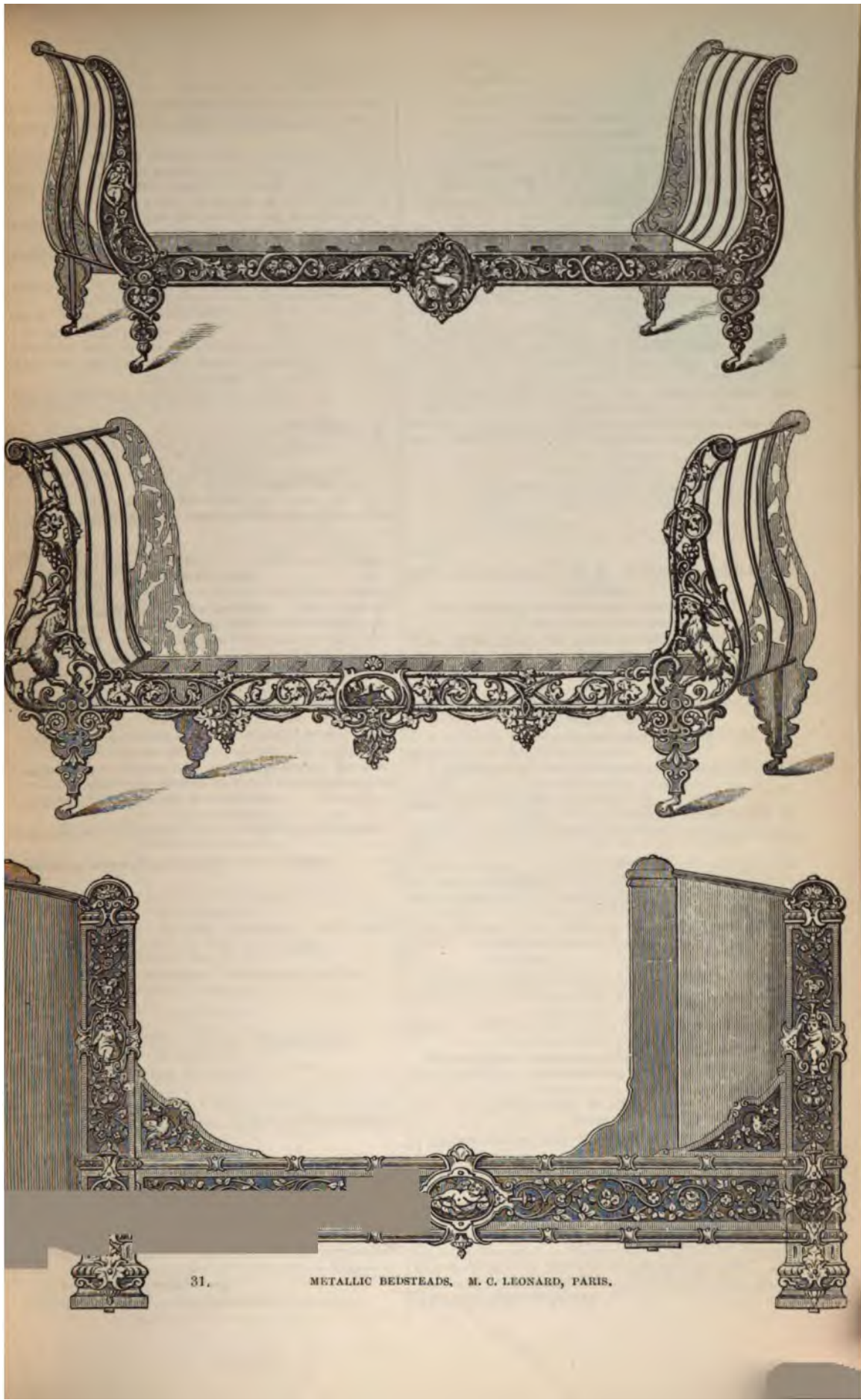


233.

GROUP IN PLASTER. M. LECHESNE, FRANCE.

- 552 JOUBERT-BONNAIRE, & Co., *Angers (Maine and Loire)*—Manufacturers. (Agent J. S. DE GAETAN, 3 Bow Lane, Cheapside.)
Raw and combed hemp and flax. Sail-cloths. Tent-cloths. Fireman's pail-cloths. White pantaloon cloths.
- 553 JOURNIAC, JEAN, 44 *Rue du Commerce, Grenelle, (Seine)*—Cork Manufacturer.
Mechanical corks, on a new system of corking.
Cylindrical capsules for seltzer-water. By the use of these capsules, the bottles may be wholly or partially emptied without any of the gas escaping, and the capsule is unscrewed for the bottle to be cleaned.
- 554 KESSEL, JEAN, 14 *Rue Bonafour, Bordeaux, (Gironde)*—Cabinet-maker.
Mechanical bed, on a new system. Patented in England.
- 555 KUHLMANN BROTHERS, *Lille (Nord)*—Manufacturers.
Samples of twenty different chemical products.
- 556 LABBAYE, —, 17 *Rue du Coire, Paris*—Manufacturer.
Specimens of brass musical instruments.
- 557 LACOMBE, LIÉON, *Calamane, Canton de Catus, (Lot)*—Manufacturer.
Specimens of artificial flowers in enamel.
- 558 LE MERCIER, —, *Rue de Seine, Paris*—Producer.
Specimens of drawings.
- 559 LAILLER, EDOUARD-HUBERT, *L'Hotellerie (Calvados)*—Manufacturer.
Specimens of heckled flax.
- 560 LAPORTE & DURAND, *Toulouse (Haute-Garonne)*—Producers.
Bread and biscuits preserved since 1845.
- 561 LAPIERRE & SON, *Vallerangue (Gard)*—Producers.
Specimens of raw silk.
- 562 LATACHE DE NEUVILLETTE, PIERRE ADRIEN, *Ferme de Valbruant*—Agriculturist.
Samples and fleeces of merino wool.
- 563 LAURENT, MME. PAULINE, 44 *Rue Richer, Paris, and Mr. MOREL'S New Burlington Street, Regent Street*—Painter on Porcelain and Enamel.
Enamel paintings:—The Venus Anadyomein, after M. Ingres. The Belle Jardiner, and the Virgin of the Veil, after Raphael, belonging to the Sèvres manufactory.
Porcelain painting:—The Reapers, after Leopold Robert, belonging to Mr. Laurent.
- 564 LAURENT, FRANÇOIS, 5, *Rue Chapon, Paris*—Cabinet-maker.
Specimens of dressing-cases, portfolios, liquor cellarets, flower-stands and other articles of cabinet-work.
- 565 LASSON, ANTOINE, 21 bis, *Rue de Laval, Paris*—Painter.
Painted glass windows, in the style of the 13th, 15th, and 16th centuries. Painted glass window in the modern style, with historical subjects, counter-drawn cartoons, &c.
- 566 LANTEIN & Co., *Reims and Tinqueux (Marne)*—Producer.
Samples of dyed and undyed wool.
- 567 LAUR, JEAN ANTOINE, 4 *Rue St. Claude au Marais, Paris*—Manufacturer.
Philosophical instruments.
- 568 LAURY, GABRIEL, 29 *Rue Tronchet, Paris*—Manufacturer.
Caloriferes in brass and cast-iron. Grates for chimneys. Fenders. Columns of various patterns. Various objects in bronze.
- 569 LEBERT, LOUIS, *Bailleau-sous-Gallardon (Eure and Loire)*—Manufacturer.
Ploughs, models of ploughs, and a machine for thrashing clover seed.
- 570 LEBLÉIS, HYACINTHE, *Pont-L'Abbé (Finistère)*—Agriculturist.
Specimens of wheat-flour of various kinds. Potato-flour.
- 571 LEBRUN, ALEXANDRE, 3 *Rue Chapon, Paris*—Manufacturer.
Various specimens, models of telescopes and microscopes, and a coffee-pot of the exhibitor's own invention.
- 572 LEBRUN, JOS. ALEX., JUN., 9 *Boulevard du Temple, Paris*—Marble-worker.
Mantelpieces for chimneys, carved in various styles.
- 573 LECHESNE, AUGUSTE JEAN BAPTISTE, 37 and 30 *Rue Fontaine St. Georges, Paris*—Producer.
The Child, the Dog, and the Serpent, two groups in plaster. The first group represents a majestic Newfoundland dog attacking a serpent, a terrified child conceals himself behind his courageous defender; in the second group the dog is victorious, his paw rests on the mangled remains of the serpent, and the child with fond caresses expresses his gratitude. These groups are represented in Plates 232, 233.
The Mother, the Child, and the Eagle; group in plaster. Pear-tree carved frame.
- 574 LECHESNE BROTHERS, 66 *Rue des Martyrs, Paris*—Manufacturers.
Specimens of carvings: Bronze paper presses; book-case of carved oak; stone-carved fountain; various articles in carton pierre.
- 575 LECLERC, JULES, *Mesnil St. Fermin (Oise)*—Manufacturer.
A window, with stained glass for churches.
- 576 LECLERC BROTHERS, *Angers (Maine and Loire)*—Manufacturers. (Agent J. S. DE GAETAN, 3 Bow Lane, Cheapside.)
Hemp and flax, raw and heckled. Hemp and flax round and flat ropes.
- 577 LEFÈVRE, ANTOINE PROSPER, 4 *Rue Jean Jaques Rousseau, Paris*—Manufacturer.
Marine and pocket chronometers. Watches, with cylinders and fuses. Various springs for watch and clock making.
- 578 LEFÈVRE, JOS. PRER., 14 *Rue du Paradis Poissonnière, Paris, and at 27 Cranbourn Street, Leicester Square, London*—Manufacturer.
Ladies' and gentlemen's screw shoes. A patented process both in France and in England.
- 579 LEFEBVRE BROTHERS, *Warguenel (Nord)*—Manufacturer.
Various samples of alcohol and unrefined potash.
- 580 LEFEBVRE, T., & Co., *Moulins, Lille (Nord)*—Manufacturers.
Lumps of ceruse; powdered ceruse.
- 581 LEFÈVRE, SEN., 53 *Nantes sur-la-Fosse (Loire-Inférieure)*—Manufacturer.
White of reverberated zinc; oxide of zinc.

- 582 LEFRANÇOIS, —, 302 *Rue St. Denis, Passage Basfour, Paris*—Manufacturer.
Metallic match and tinder boxes.
- 583 LÉGAL, RÉNÉ, *Chateaubriand (Loire-Inférieure)*—Producer.
Specimens of calf leather.
- 584 LEGRAND, MARCELLIN, 99 *Rue de Cherche, Midi, Paris*—Producer.
Specimens of printing type; specimens of Chinese impressions; composition plates of embossed types for printing for the use of the blind.
- 585 LE GRAY, GUSTAVE, *Chemin de Ronde de la Barrière de Clichy, Paris*—Producer.
Specimens of photography.
- 586 LEMAIRE, PHILIPPE HENRI, 3 *Rue Jean-Robert, Paris*—Sculptor.
Specimens of sculpture, a statue and a head.
- 587 LEMERCIER, R. J., 57 *Rue de Seine, Paris*—Producer.
Frames, with engravings.
- 588 LENORMAND, A., *Vire, Calvados*—Manufacturer.
Various descriptions of woollen cloth, satin, beaver, &c.
- 589 LÉONARD, CHARLES, 55 *Boulevard St. Martin, Paris*—Manufacturer.
Plain and ornamented iron bedsteads. These bedsteads exhibit several improved features of general construction, and are made of different kinds for public or private establishments. Some of them are represented in the adjoining Plate 31.
- 590 LE PAISANT, L., *Pont L'Abbé (Finistère)*—Agriculturist.
Specimens of potato flour and gluten.
- 591 LERVILLES, JOSEPH, 21 *Rue St. André, Lille (Nord)*—Manufacturer.
Ground chicory, called powdered Mocha; Mocha in half beans; powdered Mocha.
- 592 LESECO, HENRI, 35 *Quai Bourbon, Paris*—Designer.
Two frames, with specimens of photography.
- 593 LESOURD, DELISLE ANTOINE, *Angers (Maine and Loire)*—Inventor.
The model of a vat for fermenting wines in a closed vessel.
- 594 LEVRAUD, P. J., *Nantes and Belle-Isle en Mer*—Producer.
Preserved food:—Soups, meats, truffled pasties, sardines, &c.
- 595 LÉVY BROTHERS, 76 *Rue des Fossés du Temple, Paris*—Manufacturers.
Large vase to support lights, with painting on porcelain, after Boucher, mounted with gilt bronze figures.
Timepiece, with "The Seasons," in bronze and porcelain, and painting on soft china or tender porcelain, after Boucher.
Pandora box, in gilt and plated bronze, with medallions in painted porcelain.
Toilet box, in gilt bronze, ornamented with plated figures, and painting, after Watteau.
Timepiece, with the "Cunning child," in bronze, and pastoral painting in porcelain.
Cascade timepiece, in gilt bronze, with painting on porcelain, "Virgin with a Child," after Solario.
Timepiece, in carved bronze, on porcelain, with painting in blue turquoise.
- Large chandelier for 24 lights, with painting on porcelain—flowers and cupids.
Pair of vases (Louis XVI.), Sèvres blue china, mounted on gilt bronze, with bunches of flowers.
Clock, "The Reading Women," in gilt bronze, with dark blue faces, and cameos painted on porcelain.
Timepiece (Louis XIV.), in bronze and porcelain, "Virgin and Child," after Raphael.
Timepiece, "Two Swans," in bronze and porcelain, painting after Boucher.
Timepiece (style of the Regency), in bronze and porcelain.
Timepiece, "Two Women and Vase" (style Louis XVI.), with flowers and birds.
Large pavilion timepiece, in bronze and porcelain (style Louis XVI.), with revolving dial, and painting, after Boucher and Greuze.
Large lamp, dark blue porcelain, mounted in gilt bronze, with portraits of celebrated women, painted on Sèvres porcelain.
Large vases, in tender porcelain, with mythological subjects, after Raphael and Boucher; flowers and fruits; mounted in gilt bronze, with children supporting the handles of the vases.
Pair of candelabra, "Summer and Winter," with 10 lights, in bronze and porcelain, with paintings after Boucher.
Timepiece, "Three Birds," in bronze and porcelain, with a pastoral subject, and medallions after Greuze.
Large Dauphine inkstand, with bronze and porcelain decorations.
Timepiece, with figures of "Peace and War," and portrait of Louis XIV., and infantry, painted on porcelain.
Cup, with porcelain mounting in gilt bronze, and painting—a vine, flowers, fruits, and cupids.
Pair of Sèvres china cups, with mounting in gilt bronze, and painting after Boucher.
Victory timepiece, in the style of Louis XVI., in bronze and porcelain, with painting after Watteau.
Two cups in modern Sèvres porcelain, with dark blue enamel decoration, mounted in gold bronze.
A large porcelain flower-pot, mounted in gilt bronze, with painting after Boucher—"Silvia and Aminta."
Large table chandelier, with 16 lights, mounted in gilt bronze, with flowers and fruit.
Small table timepiece, with medallions in painted porcelain.
Pair of candlesticks (renaissance style), tender porcelain mounted in gilt bronze.
Timepiece, "Pandora," with painted porcelain faces.
Commercial timepiece in gilt bronze, tender porcelain, with painting of Cupids, flowers, and trophies.
- 596 MACHET-MAROTTE, *Reims (Marne)*—Manufacturer.
Zephyr cloths; superfine kerseymeres; satined merinos; smooth and double-milled valenciennes; cloaks; shawls; and sultana cloths.
- 597 MAILLOT, EUGENE, 28 *Rue Grenier St. Lazare, Paris*—Manufacturer.
Moulded, carved, and engraved smelling-bottles, with silver mountings.
- 598 MAISTRE BROTHERS, *Villenevette, near Clermont (Herauld)*—Manufacturers.
A piece of maddered red cloth, and a piece of dark blue cloth for army clothing.
- 599 MALLET BROTHERS, *Calais (Pas de Calais)*—Manufacturers.
Net-work imitation of Valenciennes, made by machinery; model of a lace machine.
- 600 MARGUERIE, —, 23 *Rue Ménilmontant Paris*—Manufacturer.
Painted and stained paper for hangings.



31.

METALLIC BEDSTEADS, M. C. LEONARD, PARIS.

1

- 601 MONTANDON BROTHERS, *Rue des Lions, St. Paul, Paris, and Rambouillet (Seine and Oise)*—Manufacturers.
Clock-springs and watch-springs, manufactured by the exhibitors. The manufacture of these articles has risen from a few thousands yearly to 60,000 dozen watch-springs; and from a few hundreds to 60,000 pairs of clock-springs. The establishment of the exhibitors employs a steam-engine, cutting-out machines, machines for tempering and polishing, calibre machines, and machines for rounding or turning springs of all sizes.
- 602 MANTOIS, Mlle., *Rue du Pot de Fer, Paris*—Producer.
An anatomical picture.
- 603 MAQUET, HERMEL, *Réthel (Ardennes)*—Manufacturer.
Pieces of unbleached and dyed merinos.
- 604 MAQUET, AUG., *Réthel (Ardennes)*—Manufacturer.
Pieces of unbleached and dyed merino fabrics.
- 605 MARCELLE, SAUTRET, *Béthenville (Marne)*—Manufacturer.
Specimens of unbleached and dyed merino fabrics, fine and strong.
- 606 MARCELIN, —, *40 Rue Basse du Rempart, Paris*—Manufacturer.
Mosaic table, carved; work-table; book-case; mosaic flooring; mosaic backgammon board; vase mounted with sphere. These wood mosaics are executed upon the principles of geometrical combinations, and are applicable to joinery and cabinet work of all kinds, flooring, wainscoting, &c.
- 607 MARCHAND, JN. BTE., *57 Rue Richelieu, Paris*—Manufacturer.
Gilt bronze candelabras, statuettes, chimney ornaments, and other articles in bronze; exhibited for design and workmanship. Clocks, with marble pedestals. Weapons of various kinds with ornamental hilts: the accompanying Plates 184, 228, represent some of these.
- 608 MARGA, E., *1 Boulevard des Filles du Calvaire, Paris*—Manufacturer.
Three chimney pieces carved in white marble.
- 609 MARION, AUG., *14 Cité Bergère, Paris*—Manufacturer.
Fancy stationery of every description, note paper, envelopes, &c. Machine for folding envelopes.
- 610 MARTENS, FREDERIC, *6 Rue du Pot de Fer, Paris*—Producer.
Three frames with daguerreotypes.
- 611 MARTI, S., *9 Rue d'Orleans, Marais, Paris*—Manufacturer.
Various kinds of clock machinery.
- 612 MARTIN & CASIMIR, *Tarare (Rhône), and Metz (Moselle). Dépôts in Lyons and Paris*—Manufacturers.
Silk plush for gentlemen's hats.
- 613 MARTIN, CHS. AUG., *18 Rue Mauconseil, Paris*—Trimming Maker.
Lace, silk buttons, velvet trimmings, &c.
- 614 MARTIN, OVIDE, & VERY BROTHERS, *Sommevoire (Haute Marne), and at 74 Quai de la Mégisserie, Paris*—Manufacturers.
Internal and external cast-iron house ornaments.
- 615 MASSUE, LOUIS JOSEPH, *3 Rue Aumaire, Paris*—Manufacturer.
Ivory combs of every description.
- 616 MATAGRIN, STOLZ, & Co., *Tarare (Rhône). Dépôt, 13 Rue de Clery, Paris*—Manufacturers.
White and coloured tarlatans. Various muslins.
- 617 MATHIEU, DANLOY, Widow, *Réthel (Ardennes)*—Manufacturer.
Samples of iron and steel buckles.
- 618 MATHIEU, LOUIS, *7 Rue des Poitevins, Paris*—Manufacturer.
Amputating instruments. Orthopedic apparatus of every description. A variety of surgical instruments for obstretical and other operations. Speculums. tonsilome. Artificial legs and arms; a new method of adapting the artificial leg to the stump. New cupping glasses and mechanical leeches. Improvements in fire-arms, combining a new system of priming, and of connecting the barrel with the breech in fire-arms loaded at the breech.
- 619 MAUBAN & JOURNET, VINCENT, Managers of the Joint Stock Paper Mill Company of Souche (*Vosges*). *Dépôt, 5 Rue du Pont de Lodi, Paris*—Producers.
Papers of various kinds and sizes. Imitation of China paper.
- 620 MAUCOMBLE, —, *26 Rue de Grammont, Paris*—Producer.
Five coloured portraits in daguerreotype.
- 621 MAUREL, JAYET, & Co., *43 Avenue de l'Observatoire, Paris*—Inventors.
Calculating-machines. Patented in England.
- 622 MAYER BROTHERS, *48 Rue Vivienne, Paris*—Manufacturers.
A complete daguerreotype apparatus, with a new and improved system of dark-chamber.
A patent multiplier, by the use of which an unlimited number of portraits may be had successively upon the same plate, and with a single sitting.
A patent regulating lamp, designed to obtain and to keep an equal volume of alcoholic flame under the mercury box.
Three frames, containing specimens of photographic portraits upon paper, and daguerreotype plates painted with colours, invented and prepared by the exhibitors.
- 623 MASSE, V., *5 Faubourg St. Honoré, Paris, and 3 Goldsmith Street, Gough Square, Fleet Street*—Producer.
Plans in relievio of all kinds of private landed property, country seats, parks, gardens and tenements.
- 624 MAYER, Madame T., *22 Rue de la Vieille Monnaie, Paris*—Manufacturer.
Fancy papers, specimens of engraving and lithography, fans, pasteboard, and sweetmeat envelopes.
- 625 NAZE, SON, & Co., *23 Rue du Sentier, Paris*—Designers.
Designs for printing shawls, furniture, silk handkerchiefs, and dresses.
- 626 MAZARIN, JEAN GEORGES, *83 Passage du Havre, Paris*—Inventor. (Agent, M. DE FONTAINE MOREAU, *4 South Street, Finsbury*.)
An imitation of polished steel and oxidized silver. A patented invention in France and England, as a substitute for gilding on furniture and room ornaments. This process effects a saving of from 30 to 50 per cent. on the ordinary method of gilding.

627 MÉRIV, J. M. FRANÇOIS, Engineer of the Mines of Anzin, *Nord*—Producer.

Apparatus for the extraction of ores, and the free and safe ingress and egress of miners; patented in France, England, and Belgium, and in use at the Anzin mines, near Valenciennes.

Apparatus to supersede the use of ropes in the extraction of the ore, with six little waggons. The apparatus is constructed on the scale of a fifth of its natural size.

628 MASSON, VICTOR, 1 *Place de l'École de Médecine, Paris*—Publisher.

Scientific works on natural history.

629 MEILLET & PICHOT, *Poitiers (Vienne)*—Manufacturers.

A description of paper precluding the possibility of forgery. Postage stamps: being a novel combination of paper, for the laying on of different impressions; warranted to preclude counterfeits.

[Various means have been from time to time suggested for the prevention of forgery, but frequently without success. Of late lithography has been employed for this purpose. By the same art, the engravings of old masters have been so reproduced, as to cause the copy, in many instances, to be mistaken for the original. It is contended, that if this art can be so employed as to deceive even the most practised eye with regard to such old engravings and old impressions from them, its capacity to reproduce designs and impressions of far more recent date is consequently extremely probable. The present is an attempt to render this impossible, by the combination of different printing inks, the superposition of which renders impossible those means of reproduction so easily adopted by the lithographic processes; and the resulting impression of the combination of these different inks supplies to every person employed in the fiscal departments a test that might readily enable him to detect, instantly, whether a given filigreed paper, or stamp, were falsified or genuine.

The postage-stamp impressions are printed in printing inks of various colours, corresponding to certain tints previously adapted for various lists of prices, applicable to letters and parcels, according to their respective weight, value, &c.

A counterfeit impression of the post-office stamp has not been produced, in consequence of the fear that in the event of any of the proofs being lost, they might be improperly made use of; therefore, an approximate imitation only has been executed.

The effigy in this stamp is printed in a peculiar ink, which, touched with nitric acid, diluted in a quantity of water two-thirds of its own volume, becomes of a greenish-blue colour in some little time after this application. The watered filigree ornament, in another part of the stamp, is printed in ink of another kind, and which, on being touched with the same chemical agent, instantly changes its colour, and becomes of a pale rose hue. This result would enable the clerk of the post-office, prior to the despatch of the letter thus treated, to determine, at once, whether the stamp was forged or genuine. The exhibitors, considering that it might, perhaps, be preferable to adopt, instead of this test of impressions in different coloured inks, for various categories of postal duty, have prepared different descriptions of coloured papers, varying in tint and cost, according to the weight or value of the letter or packet. But the application of the inks prepared by the exhibitors (and which cannot be erased or altered by any chemical agents, or by scratching, with-

out producing such effects as will at once detect and render palpable the attempted tampering), is not limited to postage stamps. It may be made, with equal advantage, to all papers employed in public acts and official business, to some species of commercial bills, and to other securities.]

630 MÈNE, PIERRE JULES, 7 *Faubourg du Temple, Paris*—Manufacturer.

Artistic bronzes: boar hunting, stag hunting, mare and foal.

631 MÉREAUX, JOSEPH H., 7 *Rue de la Jeunesse, Paris*—Designer.

Designs for lace manufacturers and fancy net.

632 MERCIER, A., & Co., *Louviers (Eure)*, and 74 *Faubourg Poissonnière, Paris*—Manufacturers.

Plaited card, roving card, turning-lathe, emery cylinder. A mule for spinning with 240 spindles.

633 MERCIER, SEBASTIAN, 31 *Boulevard Bonne Nouvelle, Paris*—Manufacturer and Pianoforte-maker to the late King of the French, and to the Queen of England, as well as the King of Sweden.

Cottage pianofortes, or piccolos with oblique strings.

634 MERLAUT, LOUIS J., *Rue des Catherinettes, Nantes*—Producer.

Specimens of curried, japanned, and yellow calf leather.

635 MESNIER, SON, & CARTIER, *Pontoise (Seine and Oise)*—Engine Makers.

A portable mill on a new principle, for grinding corn and all sorts of grains, and capable of grinding hard substances. This mill may be driven by water or steam power.

636 MESTIVIERS, J. M., & HAMOIR, *Valenciennes (Nord)*—Manufacturers.

Specimens of linen fabrics, pieces of cambric and clear lawn, manufactured from hand-spun flax grown in the North of France.

637 MEYER, ERNEST, 2 *Rue de l'Abbaye, Paris*—Printer.

Specimens of printing in colours, in gold and silver, by a new typographical process, adapted for book covers, titles, vignettes, and ornaments; armorial bearings for works on heraldry.

638 MEYNIER, —, 1 *Rue Hauteville, Paris*—Designer.

Different designs for fabrics.

639 MEYRUEIS & SON, BROTHERS, *Ganges (Hérault)*.
Depôt in Paris, 18 *Rue des Mauvaises Paroles*—Manufacturer.

Silk stockings, Scotch-thread stockings, silk and worsted gloves, beaver gaiters for children.

640 MICHEL, ALFRED, *Puteaux, near Paris (Seine)*—Manufacturer.

Bottles containing various extracts of the colouring matter of dye woods.

641 MICHELIN, THEODORE, 139 *Rue Montmartre, Paris*—Manufacturer.

Specimens of silk and velvet ribbons.

642 MILON, MARQUANT, *Beine (Marne)*—Manufacturer.

Specimens of woollen fabrics, barège, &c.

- 643 **MEISSONNIER, C.**, à *St. Denis (Seine)*—Manufacturer.
Specimens of chemical products; different species of salts; extracts of logwood.
- 644 **MILLY, DE** —, 52 *Rue Rochechouart, Paris*—Manufacturer.
Stearine acids and candles: specimens of a new process for converting into hard and soft soap the oily residue which results from stearic acid.
[Berzelius, in the last edition of his treatise on chemistry, says, that the application of stearic and margaric acids in the manufacture of candles, was first indicated by Gay-Lussac, but that the present exhibitor was the first who succeeded in applying it practically on a large scale. This process is now carried on on an extensive scale in this and in many other countries, and the product appears to be rapidly replacing wax and spermaceti for the better description of domestic lights.—R. E.]
- 645 **MIROUDE BROTHERS**, *Rouen (Seine-Inférieure)*—Card-makers.
Cards of every kind, made with machinery upon a novel principle, invented by M. A. Miroude, and patented. Filletting for cotton, silk, wool, ribs, double twill, and straight setting. Filletting for fancy roller, hemp, horse-hair, and tow sheet for cotton and wool; needle-pointed sheet, &c.
- 646 **MIROUX BROTHERS**, *Rue d'Angoulême du Temple, Paris*—Manufacturers.
Clocks and chandeliers, representing different kings and great men of France and England; bronze statuettes. The same in imitation of bronze. A variety of lamps of an ornamental kind.
- 647 **MOLINES, LEON**, *St. Jean-du-Gard* — Silk Throwster. (Agents in London, Messrs. FORDATI, COXHEAD, & Co., 13 *Old Jewry*.)
Samples of silks, silk waste, and cocoons.
- 648 **MOLLET-WARMÉ BROTHERS**, *Amiens (Somme)*—Manufacturers.
Fabrics in woollen and silk, for dresses, shawls, &c.
- 649 **MOLTENI & STÉGLER**, 62 *Rue Neuve St. Nicolas, Paris*—Opticians.
Optical and mathematical instruments. Model of a theodolite with concentric circles. Barometers, thermometers, areometers. Magic lanterns—dissolving views; improved daguerreotypes and pantographs of a new description. New machine for making telescope lenses.
- 650 **MONTCHARMONT**, —, à *la Fermeté, near Nevers, (Nièvre)*—Producer.
Millstones from Nevers quarries, capable of grinding above 330 lbs. of wheat per hour. Applicable to all kinds of grain.
- 651 **MONTABELLO, ALFRED LANNES DE**, *Château de Mareuil-sur-Ay (Marne)*—Inventor.
Machine for corking bottles. New patent invention. Corks with annular incisions, by means of which bottles containing effervescent liquids are more effectually closed. The object of the inventor has been to bring the expansive power of the gas itself to bear upon the cork, so that thus prepared, the outer rim of the cork acts as the stuffing of a piston, and compensates for any loss of elasticity to which the corks are liable when they have remained long in the bottles.
- 652 **MOREAU & Co.**, 22 *Rue d'Enghien, Paris*—Shirt-makers.
Linen and cambric shirts, with stitched and embroidered fronts.
- 653 **MOSER**, —, 15 *Boulevard du Temple, Paris*—Watch and Clock Maker.
Clocks set in black marble. Travelling clocks of all descriptions.
- 654 **MOTTE, BOSSUT, & Co.**, *Roubaix (Nord)*—Cotton-spinners.
Single and twisted cottons. A piece of cotton velvet. Specimens of a process for spinning cotton, patented in France and England.
- 655 **MOULARD, Miss**, 39 *Rue Montmartre, Paris*—Trimming-maker.
Lace head-dresses, caps, tobacco-bags, and net purses. Various fancy articles in chain-stitch work.
- 656 **MAES**, —, 9 *Cour des Petites Ecuries, Paris*—Manufacturer.
White and coloured glass; optical glasses, &c.
- 657 **MOUSSARD**, —, 58 *Allée des Veuves, Paris*—Coach-maker.
Four-wheeled carriage. Drawing of a new model of waggon. Town and travelling chariot, on a new system. Two new kinds of axle-tree, machine-steps, &c. Machines for greasing and disengaging the spokes of wheels.
- 658 **MULLOT & SON**, 69 *Rue Rochechouart, Paris*—Inventors.
Sounding instruments of various kinds, newly invented.
- 659 **NAST, HENRY JEAN**, 22 *Place des Vosges, Paris*—Manufacturer.
Various articles of white and gilt or decorated china.
- 660 **NAZET, BUIRETTE**, *Rheims (Marne)*—Manufacturer.
Stuffs for waistcoats and cloaks. Fine light cloths for dresses. Double-milled cloths and kersycemere satin for paletots. Shawls.
- 661 **NÉRAUDEAU, JULES ALEXANDRE**, 16 *Rue des Fossés Montmartre, Paris*—Manufacturer.
Specimens of various ledgers for offices, &c.
- 662 **NEUBURGER, A.**, 4 *Rue Vivienne, Paris*—Manufacturer and Patentee.
Omnibus lamps with moveable burner: these lamps are exceedingly simple and without mechanism, the oil rises to the wick by its own capillary attraction; the burner can be disengaged at pleasure, and taken to pieces without any tools. Convex glass lamps; night lamps, &c. Several of these lamps are represented in the cuts on the next page.
- 663 **NICOD, V., & SON**, *Annonay (Ardèche)*—Manufacturer.
Twisted or woven wicks for wax or stearine candles; made by improved machinery.
- 664 **NICOLAS, PAUL**, *Thann (Haut-Rhin)*—Inventor and Proprietor.
Machine called Pauline, for engraving the rolling-presses used in printing fabrics. This machine is exhibited for novelty of construction. By its application the roller can be cut simultaneously with four, six, eight, nine, or ten gravers, and proportionably less time will be employed in the production of a design than by the common method, in which a single graver is used.
Besides the great economy of time and the superiority of workmanship, the designs produced by the "Pauline" are more perfect than those produced by aquafortis, or made with a hammer. There is besides an improvement in the colour, and appearance of the whole.
The great advantage which this engine presents to the manufacturer is, that of enabling him to increase the number of his designs, and of diversifying them to a great extent.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Neuburger's Lamps.

- DRÉE, JEAN EDWARD, *Passage Dauphine, Escalier E, Paris*—Bookbinder.
 les Nobles Malheureux. Bound in levantine blind filets; lined with morocco, gilt in compartments of small tooling.
 oires de Troye. Bound in levantine morocco, superior ornaments; lined with morocco, gilt in same style.
 itroverbes des Sexes Masculin et Feminin. Bound in levantine morocco, gilt in mosaic style of the , called Grolier.
 m Librorum Officina D. Elzevirii. Bound in morocco, gilt in mosaic, lined with morocco, same style.
 ides Chroniques de France. Bound in levantine morocco, gilt compartments composed in small
 ides Chroniques de France. Bound in levantine morocco, in the Italian style of the 16th century.
 ides Chroniques de France, 8 vols. Bound in same style as the preceding.
 ication. Fanciful binding in levantine morocco, blind tooling.
 Rime de Dante. Bound in levantine morocco, lined with morocco, gilt in compartments of same style.
 e Barragaugne. Bound in levantine morocco, superior ornaments, lined with morocco, fancy blind ornamented mark.
 de France turbannisée, and Mellin de St. Louis. Bound in levantine morocco, small tooled.
 le Pièces Galantes. Bound in levantine morocco, compartments in small tooling.
 s de Maucroix and Siego d'Orleans. Bound in morocco, blind filets.
 , 2 vols. Bound in levantine morocco, lined with morocco, gilt compartments.
 uvrages, 7 vols. Bound in fine calf, with gilt compartments.
- L, sen., 33 *Rue de Lancry*—Manufacturer.
 abs with hollow round teeth, in every variety.
- IA, GRAB, & Co., *Valenciennes (Nord)*—
 Sugar-refiners.
 of sugar extracted, by the process of Mr. Goussier, from molasses which were considered as the ordinary process.
- J., 28 and 30 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.
 s of fancy articles in cornelian and agate, such as seals, articles of jewellery, &c.
- J DIN-CORMY, *Bétheniville (Marne)*—
 Manufacturer.
 s of unbleached and dyed merino fabrics.
- F, HYACINTHE, 36 *Rue de Chabrol, Paris*—
 Manufacturer.
 atus for making gaseous liquids. Bottles with
 machine for restraining gaseous liquids.
- ARD, E., 16 *Rue du Grand Chantier, Paris*—
 Manufacturer.
 ith copper and zinc frames.
 bjects in zinc in imitation of bronze.
- LARD, J. M., 21 *Rue des Francs-Bourgeois, Paris (au Marais)*—Manufacturer.
 s of colours used by miniature and water-
 ers, and for various other purposes.
 s of black, white, and coloured pencils for
 l for pastels.
 s of paint-boxes in a variety of forms.
- 673 PARUIT, V., DAUTRESME, SONS, & Co., *Elbeuf (Seine-Inférieure)*—Clothiers.
 Gentlemen's superior fancy articles, such as trousers, waistcoats, paletots, for winter and summer, of various colours.
- 674 PATOUX-DRIION, & Co., *Aniche (Nord)*—
 Manufacturers.
 Window glasses of every description. Blown glass. Chemical products. Framed and quicksilvered looking-glasses.
- 675 PAGNY, —, *Bayeux (Calvados)*—Manufacturer.
 Specimens of lace and embroidery.
- 676 PAUL, ULYSSE, *Bourg les Valence (Drôme)*—
 Cotton-printer.
 Coloured linen kerchiefs. Fancy silk handkerchiefs. Indian silk pocket handkerchiefs.
- 677 PELTEBEAU, AUGUSTE, *Châteaurenault (Indre and Loire)*—Manufacturer.
 Specimens of raw hides. Smooth cow-skins. Smooth ox and cow-skin cuttings.
- 678 PESEL & MENUET, 7 *Rue Bourbon Tilleneuve, Paris*—Manufacturers.
 Samples of cashmere wool-yarn; and single and double yarn for shawls and hosiery. Cashmere tissue cuttings. Cashmere and silk fabrics for dresses. Twilled cashmere cloth.
- 679 PETIT, CLÉMENT, *Boult (Marne)*—Manufacturer.
 Pieces of unbleached and dyed merino fabrics of fine quality.
- 680 PHILIP, —, 16 *Passage Choiseul, Paris*—
 Manufacturer.
 Tortoise-shell bracelets, brooches, ornaments, circlets, and rings.
- 681 PILOUT, —, 21 *Rue du Puits de l'Hermitte, Paris*—
 Embroiderer.
 An embroidered robe.
- 682 PIN-BAYARD, *Roubaix (Nord)*—Manufacturer.
 Woollen, satin, and satin-de-chine cuttings for dresses, merino, shawls, &c.
- 683 PAUL BROTHERS, *Paris*—Manufacturers.
 Brazeros for Turkey.
- PLICHON . VICTOR, 10 *Rue des Filles du Calvaire, Paris*—Manufacturer.
 Ornaments, bracelets, ear-rings, rings, and other articles of jewellery of gilt brass.
- 685 POITEVIN & SON, *Louriers (Seine-Inférieure)*—
 Manufacturers.
 Fancy cloths for paletots (summer and winter materials).
- 686 POLLIART & CARPENTIER, *Aubenton (Marne)*—
 Manufacturers.
 Samples of carded yarn. Remnants of Rheims cloths and flannels made by machinery.
- 687 POUYAT, J., *Limoges, St. Leonards, and St. Yrieux (Haute Vienne)*—Manufacturer.
 Raw materials for making porcelain. Different samples of articles in porcelain.
- 688 PRAX & LAMBIN, 9 *Passage Basfour, Rue St. Denis, Paris*—Manufacturers.
 Saddles of various descriptions. Harness. Various riding appurtenances. English, French, American, and Mexican saddles. Saddle on the plan of Baucher.

- 689 **PRESBOURG, PAUL**, 56 *Rue Quincampoix, Paris*—
Manufacturer.
Various brushes for all kinds of purposes, artistic and commercial.
- 690 **SAUGRIN, —**, 11 *Boulevard Montmartre, Paris*—
Producer.
Daguerreotype miniatures.
- 691 **SAINTIN, ALPHONSE**, 8 *Rue du Petit Bourbon, Paris*—
Engraver.
Frame with engravings.
- 692 **SÉGUIN, ANTOINE**, *Rue d'Assas, Paris*—
Manufacturer.
Chimney, carved in white marble, medal, basso relievo, panel moulding, angel's head, &c.
- 693 **SIMIER, JEAN**, 38 *Rue de L'Arbre, Paris*—
Bookbinder.
Specimens of bound books.
- 694 **SLATE WORKS COMPANY OF RIMOGNE AND ST. LOUIS-SUR-MEUSE (Rimogne)**—Producers.
Slates of various kinds.
- 695 **THIBIERGE, —**, 4 *Rue Vide Goussel, Paris*—
Manufacturer.
Perukes for men and women. Fronts for ladies.
- 696 **TROUMIN, ADOLPHE**, 44 *Boulevard Beaumarchais, Paris*—
Manufacturer.
Embossed and cast-brass furniture ornaments.
- 697 **DE TILLANCOURT, EDMOND**, 85 *Rue de Chaillot, Champs Elysées, Paris*—
Manufacturer.
Specimens of spun raw silk from the North of France. The produce is intended for light fancy materials, such as gauze, barège, &c.
- 698 **TILMAN, —**, 2 *Rue Ménars, Paris*—
Manufacturer.
Patent artificial flowers, for ball dresses, wedding head-dresses, &c.
- 699 **TORDEUX, —**, *Cambrai, Nord*—
Manufacturer.
Animal charcoal, of various qualities, for refining sugar. Machine used in the construction of factory chimneys. This simple machine in wood weighs only 25 lbs., and possesses the great advantage of obviating the necessity of scaffolding.
- 700 **TRELON, WELDON, & WEIL**, *Rue de Bercy, St. Antoine, Paris*—
Manufacturers.
Specimens of porcelain knobs of every kind.
- 701 **TROTTÉ, HENRI**, 19 *Rue Quincampoix, Paris*—
Hosier.
Specimens of hosiery, network, &c.
- 702 **TROUVÉ, CUTIVEL, & Co.**, *La Suze (Sarthe)*.
Tanners and Curriers.
Specimens of white calf leather; japanned calf leather; boot legs.
- 703 **TRUC, CLAUDE**, 9 *Rue de Saintonge, Paris*—
Manufacturer.
Moderator lamps in bronze and porcelain, without wheel work, adapted for use in large rooms and for table lights, giving a very clear light. One of these lamps is represented in the annexed cut. Composition china lamps of Sèvres shape, &c. adapted for use in summer as flower vases.
- 704 **TUVEÉ & Co.**, 13 *Rue de Choiseul, Paris*—
Manufacturers.
Specimens of ribbons, silks, and superfine fancy goods.



Truc's Moderator Lamp.

- 705 **VACHON, SON, & Co.**, *Place Satonay, Lyon (Rhône)*—
Manufacturers.
Machines for cleansing corn, consisting of a seed-cleaner and separator, with an inclined plane, and with a cylindrical arrangement for millers. By this contrivance the wheat is thoroughly separated from all extraneous matter, gravel, dirt, &c.
- 706 **VALÉRIUS, PHILIPPE**, 7 *Rue du Coq, St. Honoré, Paris*—
Manufacturer.
Bed for patients under treatment for reduction of femoral dislocations. Orthopedic belts and stays. Concave inclined plane for fracture of the femur, with drawing screw. Invisible bandages, &c.
- 707 **VALES, CONSTANT**, 161 *Rue St Martin, Paris*—
Manufacturer.
Various kinds of pearls; pearl head-dresses; statuettes mounted with pearl, &c.
[False pearls were invented in the time of Catherine de Medicis, by a person of the name of Jaquin. They are made of small globules of glass, blown by the ordinary lamp. The pearly lustre is communicated by introducing, by means of a blowpipe, a small quantity of nacreous substance obtained from the surface of the scales of a small fish very common in the Seine and the Rhine, and also in the Thames. This substance, preserved with sal ammoniac in a liquid state, is commonly known under the name of "Oriental essence." After having covered the inside of the pearl with this liquid, a coating of wax is added, which is coloured to the required shade. The manufacture of pearls is principally carried on in the department of the Seine, in France. There are also manufactories in Germany and Italy, but to a small extent. In Germany, or rather Saxony, a cheap but inferior quality is manufactured. The globe of glass forming the pearl, in inferior ones, being very thin, and coated with wax, they break on the slightest pressure. They are known by the name of German fish pearls. Italy, also, manufactures pearls, by a method borrowed from the Chi-

nese; they are known under the name of Roman pearls, and are a very good imitation of natural ones; they have on the outside a coating of the nacreous liquid. The Chinese pearls are made of a kind of gum, and are covered likewise with the same liquid. In the year 1834, a French artisan discovered an opaline glass of a nacreous or pearly colour, very heavy and fusible, which gave to the beads the different weights and varied forms found amongst real pearls. Gum instead of wax is now used to fill them, by which they attain a high degree of transparency, and the glassy appearance has been lately obviated by the use of the vapour of hydro-fluoric acid. This acts in such a manner as to deaden the surface, and remove its otherwise glaring look.]

708 VALIN, JEAN, *Faubourg Mont Jovis, Limoges (Haute-Vienne)*—Manufacturer.

Specimens of articles in porcelain. Decanters. Chandeliers. Basins. Statues, &c.

709 VALTAT & ROUILLÉ, 70 *Rue de Rambuteau, Paris*—Manufacturers. (Agents, GRAETZER & HERMANN, 3 *Huggin Lane, Wood Street*.)

Specimens of shirts. Shirt fronts of every kind, made by machinery and by hand. Shirt collars. Cravats. Flannel waistcoats, &c.

710 VAUCHER, PICARD, *Rethel (Ardennee)*—Manufacturer.

Pieces of merino fabric, plain and coloured.

711 VANDENBROUCKE, E., 16 *Rue de Strasbourg, Paris*—Inventor and Manufacturer.

The coffee-roaster: a machine which preserves the flavour of the article by taking off its dampness. At the end of the roller, there is a little door, which is left open till the colour of the coffee changes; by shutting this, the flavour is concentrated, and the torrefaction is produced by the vapour of the coffee. In the inside of the roller, is a piece of woven wire which hinders the coffee from touching the sheet iron, and prevents it from burning. There are also fans for dividing the coffee or cocoa, and producing always the same degree of torrefaction. The stand of these coffee-roasters is in cast-iron to admit of the burning of wood, coke, or charcoal fuel. There is besides, a little rail to draw the roller back, and an iron support to hold it.

Small coffee-roasters, for private families, with or without the support.

712 VANDERDORPEL, SOX, 3 *Rue Chapon, Paris*—Manufacturer.

Specimens of gilt, lithographed, and coloured borders, corners, ornaments, and frames. Gilt and fancy papers. Various embossings.

713 VAN ECKHOUT & Co., 38 *Rue Notre Dame des Victoires, Paris*—Manufacturers.

White Alençon, Brussels, Binche, and Flanders lace. Black Chantilly, Bayeux, Caën, and Grammont lace.

714 VAN LEEMPOEL DE COLNET & Co., *Quiquengrogne Glass-works, near Chapelle (Aisne)*—Manufacturers.

Large and small-sized bottles, for all kinds of purposes. The manufacturers having visited the principal glass manufactories of England and the Continent, and after many years' indefatigable attention to the improvement of glass, have succeeded in the manufacture of a most beautiful and strong material—the atmospheric pressure being from 25 to 36. Specimens of champagne bottles.

715 VANTROYEN & MALLAT, *Lille (Nord), Rue Jemmapes*—Cotton-spinners.

Specimens of cotton-yarn for muslins; water-twist glazed for lace and bobbin-net; dyed and bleached yarns; glazed yarn (imitation of silk), &c.

716 VASSE, —, *de St. Ouen. Manufactory at Leribour's, Pont Neuf, Paris*—Producer.

Universal gauge, comprising 17 different gauges, and indicating which to use in every particular case.

717 VARRALL, MIDDLETON, & ELWELL, 9 *Avenue Trudaine, Paris*—Manufacturers.

A continuous paper machine, with a complementary machine to divide into sheets. This machine is represented in the engraving on the next page.

718 VAUGEOIS & TRUCHY, *Rue Mauconseil, Paris*.

Specimens of gold and silver embroidery and lacework.

719 VEDY, FELIX, 52 *Rue de Bondy, Paris*—Optician.

Astronomical instruments for the navy, mounted in bronze, in mahogany cases. Small pocket sextant in copper. Six-inch sextant, with five glasses, &c.

720 VEISSIERE, ARNAUD, *Puteaux, near Paris (Seine)*—Dyer.

Specimens of dyed stuffs of Merino wool.

721 VELIN BROTHERS, *Gerbeville, Meurthe*—Manufacturers.

Fabrics for trousers, made of unbleached yarn, plain, or with cotton mixture, of various shades.

722 VERGE, A., sen., 17 *Chaussée Magdeleine, Nantes*. Oak-wood arm-chair, style Pompadour.

723 VERSTRAETE BROTHERS, *Lille (Nord)*—Linen-spinners.

Specimens of twisted thread, for sewing, and for the mounting of weaving-looms, manufactured on a new process, patented in France, England, and Belgium, by which a glossy appearance is given to the article.

[The application of a process for communicating a gloss to the thread, is claimed as the invention of the present exhibitors. The intention of the process is to increase the beauty of appearance of the thread, and to communicate to it additional strength. For the healds or harness of the Jacquard loom, which are the threads dividing those of the warp, it is of great consequence that no undue friction should be experienced by the latter in the process of weaving. The facility of the use of sewing thread is also greatly increased by giving its surface a smooth and polished character.—R. E.]

724 VAN OVERBERGH, —, 9 *Rue de Choiseul, Paris*—Manufacturer.

Specimens of pianofortes.

724A VERSEPUY, RIOM, Chemist. (Agent, M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)

Specimens of white and red lead, manufactured by a new process.

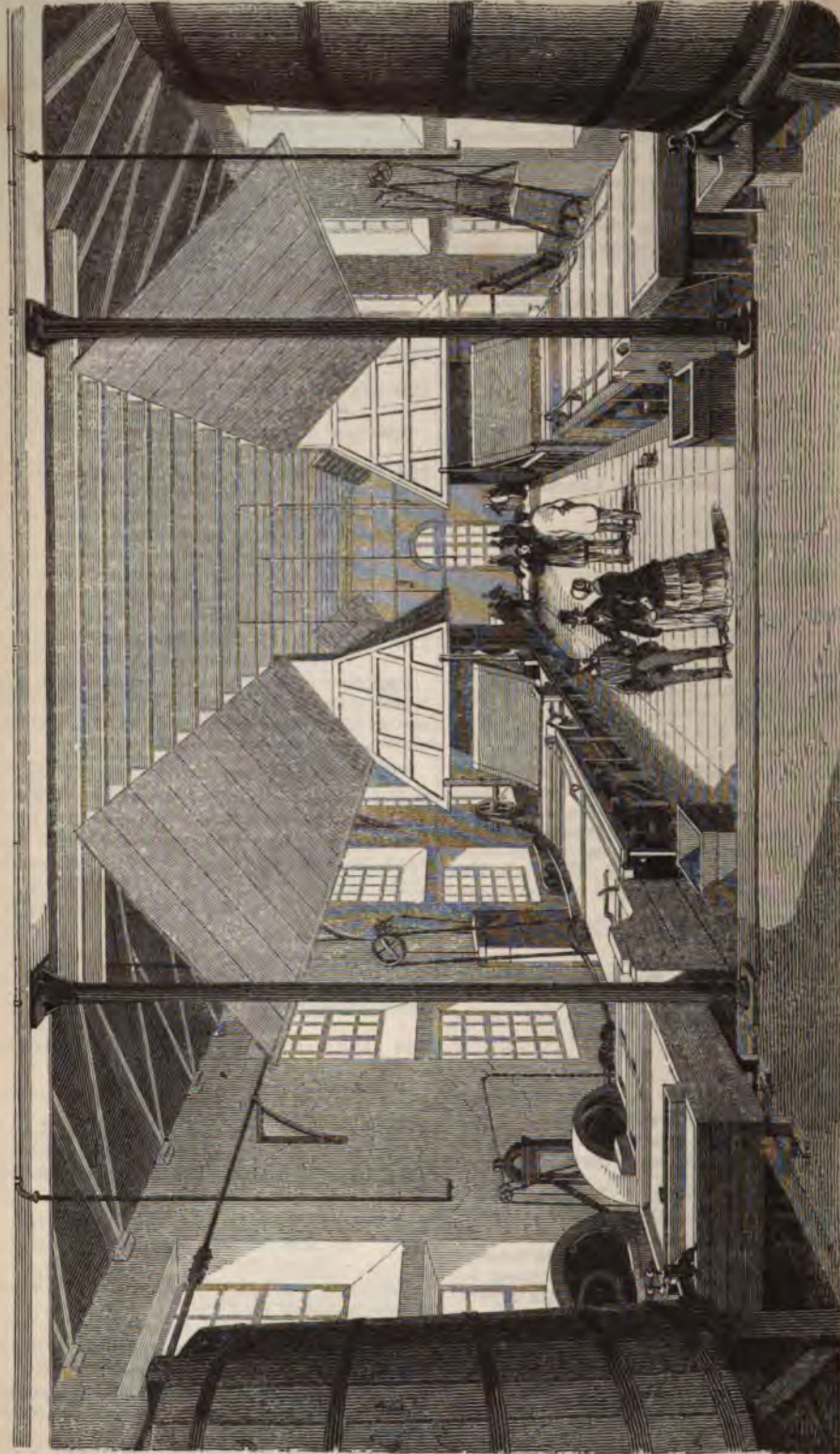
725 VIAULT, ESTE, 17 *Rue de la Paix, Paris. Dépôt at MM. Thierry & Sons, 278 Regent Street*—Manufacturer.

Specimens of slippers, ladies' boots, and ladies' foot coverings, of every description.

726 VIE, JOSEPH, 161 *Rue St. Jacques, Paris*—Inventor, Manufacturer, and Patentee.

Patent vulcanised India-rubber elastic stockings, for varicose veins; exhibited for fineness and conveniency.

Supporting belts.
Elastic fabrics in vulcanised caoutchouc, for ladies' stays.



Paper-mill, with Messrs. Vassal, Middleton, and Hall's Continuous Paper Machines.

727 VIDAL, RAYMOND, *Toulouse (Haute Garonne)*—
Manufacturer.

Specimens of vermicellis, nutritive pastes, starch, &c.

728 VIGOUROUX, STANISLAS, *Reims (Marne)*—
Manufacturer.

Combed-carded threads; plain and printed fabrics in cotton, web, and fancy threads, for ladies' dresses, and for waistcoats. Bobbin-machine, with distinct wimbles. Patented.

729 VIGUIER, B., 6 *Boulevard, Beaumarchais, Paris*—
Manufacturer.

An hydraulic foot-warmer, or chafing-pan, adapted for day or night use. Patented.

730 VINCENT & TISSERANT, 21 *Rue Michel-le-Comte, Paris*—Manufacturers.

Sealing-wax, wafers, gelatine-sheets, writing-inks, &c.

731 VIOLARD, GEORGES, 4 *Rue de Choiseul, Paris*—
Manufacturer.

A shawl and a piece of lace, in a new style of manufacture. Exhibited for novelty and cheapness.

732 VIREBENT BROTHERS, *Toulouse (Haute-Garonne)*—
Manufacturers.

Representations of different well-known capitals or figures of monuments, in plastic freestone: ornamented chimneys in the renaissance style, &c.

The natural colour of the clay employed is white or buff; for certain articles Etruscan red and black painting and gilding may be applied with facility.

Complete and varied series of decorative articles for the construction or restoration of the interior and exterior of churches.

733 VISSIERE, —, *Argenteuil (Seine and Oise)*—
Manufacturer.

Large and pocket chronometers, indicating minutes and seconds.

734 VIVET, EDMÉ THEODORE, 6 *Rue des Petits Hôtels, Paris*—Decorative Painter.

Patterns of hangings painted with wax.

[It would seem that this method of decoration has been long known, and dates as far back as the 16th century. In certain old castles, and particularly in that of Chenonceaux on the Cher, remnants of them have been discovered in an excellent state of preservation. The hangings appear little influenced by the ordinary agencies of decay.—R. E.]

735 VUILLAUME, JN. BTE., 42 *Rue Croix des Petits Champs, Paris*—Manufacturer.

A complete set of string and bow musical instruments, with bows made by patent machinery. Violins, tenors, and violencellos, in imitation of Straduarus, Guarnerius, Amati, Magini, &c.

736 WAGNER, J., 47 *Rue Neuve des Petits Champs, Paris*—Manufacturer.

Two eight-day clocks, striking the hours and the quarters, remontoir movement, with concentric wheels, and compensating pendulum with levers. The one has an independent pin escapement, and the other has an escapement with independent mass of impulse.

An eight-day clock, of common construction, striking the hours and the half hours, remontoir movement, and pin escapement applied directly on the pendulum rod, with simple compensator.

A one-day clock of common construction, striking the

hours and half hours, escapement with direct impulse on the pendulum.

An eight-day clock of common construction, striking the hours and the half hours, with new arrangement of pin wheels to prevent the pins from being bent or broken, and a simple compensator.

An eight-day clock, striking the hours, the quarters, and one blow before every quarter, with improved compensator.

An eight-day clock, of polished brass, striking the hours and the half hours.

The going train of all these clocks has an auxiliary spring, to continue the motion during the winding up.

Clock-work mechanism with entirely new arrangement, capable of uniformly regulating any rotary motion of a given angular speed. This machine is intended for registering observations either in natural philosophy or astronomy, and especially those of short duration, to the hundredth part of a second. This clockwork motion may be employed in large establishments, to indicate the time on a great number of dials. The minutes and even the seconds may be shown, whether the motions are produced in the ordinary way, or by electricity.

A new machine for demonstrating the law of falling bodies.

A machine, called marigraph, for registering, in a permanent manner, the height of the tides, &c.

An instrument, called barograph, for registering barometric variations.

A dynamometer, applicable to agricultural instruments, chiefly to the plough.

Four metronomes—instruments to beat and divide the time. Two are of simple construction, and two have a bell that strikes a blow at every measure of two, three, or four.

Four instruments—for demonstrating certain principles in horology.

737 WALWEIN, —, 24 *Passage de l'Industrie, Paris*—
Designer.

Designs for cloth and Jacquard fabric printing establishments.

738 WATRELOT-DELESPAUL, 10 *Rue Nationale, Lille (Norde)*—Manufacturer.

Chocolate of various descriptions.

739 WEBER, J., 2 *Rue Hautefeuille, Paris*—Bookbinder.

Specimen of a new system of bookbinding, in use at the National Library, at the Museum of History, and at the St. Geneviève Library.

This system enables any one to bind, with the greatest ease, any number of prints, plans, maps, and drawings, of any size, from one leaf to a volume, and without injuring the margins.

This binding unites with taste and elegance the indispensable quality of solidity. A volume thus bound, when placed in the library, has the appearance of carefully finished binding, from which it only differs in its mechanism, this being placed in the interior.

740 WEYGAND, ATE., 108 *Ficille Rue du Temple, Paris*—Manufacturer.

Clocks and candelabra in bronze; statuettes and groups in artistic bronze.

741 WHITAKER, SON, & Co., *Charleville (Ardennes)*.

Sheets and cards for wool or cotton.

742 WILLIAMS, HENRI, 111 *Rue de Charenton, Paris*—
Manufacturer and Proprietor.

Three panels, in relief in the Tuscan, Gothic, and Renaissance styles. The woodwork in deal, is totally

covered with paper in imitation of woods, marbles, and agates; exhibited for workmanship and economy.

These panels show an entirely new method for the decoration of banquet halls, ball and concert rooms, theatres, &c.

744 WOLF, —, 2 Rue St. Appoline, Paris—Ivory-carver.
Specimen of ivory carving.

745 YON, Mrs., 110 Rue Vieille du Temple, Paris—Proprietor.

A frame in oak containing,—

1. The Flight into Egypt, by Gayrard and Yon.
2. Christ on the Cross, by Vechte.
3. The Assumption, after Muck.
4. The Marriage of the Virgin, after Raphael.
5. The Carrying of the Cross, after Overbeck.
6. Daphnis and Chloë, by Gayrard and Yon.
7. German Virgin, after Albert Durer.
8. Virgin of the Lake, after Leonardo da Vinci.

747 ZEIGER, AUG., Rue des Marronniers, Lyons—Inventor.

The gymnasium of the pianist, an octave pianoforte. A patent invention.

749 AFFOURTIT, GASTON LOUIS, Vallerange (Gard)—Producer.

Specimens of silks and silk cocoons.

750 ALLARD & CLAYE (late VIOLETS), 317 Rue St. Denis, Paris. Dépôt, 11 Great Castle Street, Regent Street, London—Manufacturers.

Toilet soaps of various kinds in masses and shapes for use, manufactured by a hot process. Liquid or cream shaving soaps. Perfumed essences or extracts, in variety. Improved spirituous acetine de thridace or toilet vinegar. Cosmetics and other perfumes.

751 APPERT, C., Paris—Manufacturer.

Preserved roasted and stuffed mutton, and other articles of food.

[The specimen of an entire animal preserved from decay, and in a state fit for human consumption at any present or future period, is a striking illustration of the success of this method of preparing food, which was originally invented by M. Appert, and has since been largely practised in this and other countries. The process is as follows—the substance to be preserved is placed in a close vessel and heated in a water bath until it is considered to have been sufficiently done. It is then hermetically sealed, and a vacuum is formed by the condensation of the steam. It appears, however, that somewhat of the delicacy of the flavour of the food thus preserved was lost in the process, which was due to its absorption of oxygen. This has been recently obviated by M. Charles Appert, by exposing the article to be preserved, to heat for a much shorter period. By this means its original fresh taste is preserved, and retained for any length of time. The exclusion of atmospheric air from the cases containing these articles forms the principle of M. Appert's original patent.—R. E.]

752 AREBA, NOEL GUILLAUME, 3 Rue de la Barillerie, Paris—Inventor and Manufacturer.

A tell-tale clock, which also indicates the days of the month. Another, with simple movement. An hydrometer for liquids. Clock with alarm bell and new dial which revolves for the purpose of facilitating the winding up of the clockwork.

753 ARNHEITER, MICHAEL, 9 Place St. Germain, Despriz, Paris—Manufacturer.

Drying-frames, pruning-knives, fumigating apparatus, grafting-knives, hedging-knives, saws, and various other implements used in horticulture, agriculture and domestic economy.

754 AUBERGIER, PIERRE HECTOR, Clermont Ferrand (Puy de Dôme)—Manufacturer.

Specimens of French opium and syrup of lactucarium.

755 AYNÉ BROTHERS, Lyon (Rhône), 26 Port St. Clair—Manufacturers.

Specimens of dyed silks; silk for lace; finished edging for lace; edging for embroidery.

756 BARRANDE, JN. BTE., 26 Rue du Fer à Moulin, Paris—Tanner.

Specimens of tarring, tanning, and dyeing, consisting of manufactured calf, kid, lamb, sheep, and goat skins, for boots and shoes, gloves, braces, and garters.

757 BARTHELATS, LOUIS DE, Logères, Commune de Châtel de Honoré (Allier)—Manufacturer.

Specimens of silk and silk cocoons.

758 BERSIN, A., Agent of the Marsanne Mines, Drôme, and at 22 Rue de Trévise, Paris.

Specimens of French tripoli, called tellurine. Pink, yellow sifted, and native tripoli, for polishing gold, silver, copper, steel, zinc, &c.; also for cleaning marbles and oil paintings.

759 BEARD, JULES, 20 Rue Jean Jacques Rousseau, Paris—Inventor.

Specimens of copper-plate printing, with paper imitating the reflection of mother-of-pearl. A new invention.

760 BENOUVILLE, MÉLANIE, Igny, Canton de Gray (Haute-Saône)—Manufacturer.

Skeins of raw silk.

761 BERANGER, JOSEPH, & CO., 97 Rue Centrale, Lyon (Rhône)—Manufacturers.

Steelyard pendulum scale for shops, weights, steel-yards, and for general use.

New and improved weighing machines, approved and adopted by most of the railway companies and government offices. Patented in France and England.

Self-registering weigh-bridge for weighing carriages, cattle, &c. It indicates the number of all articles weighed during a day, or any other given time, together with the weight of each article and its number (the articles being numbered consecutively). This information is marked upon a table by the instrument itself, without causing any delay, as five, six, or even seven carriages can be weighed per minute.

Beranger's peso-counter. Fig. 1 represents a portable

Fig. 1.



apparatus, possessing all the advantages of a beam balance, without the inconvenience of weights, or the disadvantages attaching to the steelyard. It has been adopted, from its speedy operation, by several railways, also for the general service of the marine arsenals, and other establishments in France.

New steelyard. Fig. 2 represents an instrument capable of weighing articles without the employment of many weights. It may be advantageously used in place of the ordinary steelyard or beam weighing-machines, and will indicate the smallest fractions. It is compact and convenient in form and size, moderate in price, and is applicable to any commercial purposes, from the lightest articles, to heavy goods weighing from 10 to 12 tons.

Fig. 2.



Beranger's pendulum scale. Fig. 3 shows a novel arrangement of weighing apparatus, called by the inventor, "Balance pendule." It is very much used in all kinds of retail business, combining the advantages of beauty, solidity, and precision. It requires neither cleaning nor repairs.

Fig. 3.



762 BERNARD, DESIRÉ F. 30 *Rue des Mamourzets*, Paris—Optician.

Microscope; camera lucida; and instruments for land-surveying.

763 BERT, —, 7 *Rue St. Marcel*, Lyon (Rhône)—Manufacturer.

Silk fabrics of ancient manufacture; figured brocade and taffeta; chasuble cross; woven likenesses of Louis the Fifteenth and Catherine the Second, &c.

764 BERTRAND, ADOLPHE, 26 *Port St. Clair*, Lyon (Rhône)—Manufacturer.

Silk robe, used by the Parisian ladies. Silk robe, used by the ladies of the Levant. Specimens of parasols, shawls, chiné, and all sorts of printed fabrics. Embroidered robes, Pompadour robes, &c. Poplin dress, equal to the finest Irish fabrics; exhibited for its style and manufacture. The exhibitors claim to have been the first to introduce the poplin of Lyons, and to create for it a general demand.

765 BEYERLÉ, GUSTAVE, 44 *Rue Magazine*, Paris—Manufacturer.

Cylindrical optical instruments; concave glasses; poly-prisms; lenses; eye-glasses.

766 BIONDETTI, HENRI, 48 *Rue Vivienne*, Paris—Manufacturer.

Trusses and orthopedic bandages.

767 BISIAUX, GEORGES ADOLPHI, 54 *Rue de la Victoire*, *Chaussée d'Antin*, Paris—Decorator.

Three pictures. 1st, an imitation in oil painting of all kinds of marbles. 2nd, an imitation of all sorts of native and foreign wood: this painting is in water colours, upon a ground prepared in oil, which preserves its freshness, because the colours employed are all vegetable. 3rd, part of a dining-room wall, illustrating the use of the above specimens.

This mode of decoration may be applied to all kinds of dwellings, and is employed in most of the public establishments of Paris. The diversity of its shades renders it of easy application under various forms.

768 BLANCHET BROTHERS, *Fures*, near *Tullins* (Isère)—Manufacturers.

Native steel tire, planed, for locomotive wheels, said to last considerably longer than the best iron tire, and to wear with perfect regularity until the last.

769 BOCHE, MICHEL, 19 *Rue des Vinaigriers*, Paris—Manufacturer.

Powder-flasks, and various sporting implements. Patented in England.

770 BOERINGER & Co., 6 and 8 *Cour des Miracles*, Paris—Manufacturers.

A door with the application of a security bolt on a new system.

771 BONNETON, —, *St. Vallier*, Drome—Silk-throwster.

Specimens of raw and thrown silks. Silk cocoons.

772 BONZEL BROTHERS, *Haubourdin* (Nord)—Manufacturers.

Specimens of white lead; ultramarine blue. Ceruse manufactured by the new process of Mr. Charles Kle-berger.

773 BOSSI, JEAN BAPTISTE, 26 *Rue St. Hyacinthe*, *St. Michel*, Paris—Manufacturer.

Marble table in mosaic work.

774 BOVASSE, LEBEL, & Co., *Rue du Petit Bourbon*, Paris—Gelatine-makers.

Gelatine figures, pinked and ornamented with paste brilliants: a variety of specimens.

775 BOUCHARD-HUZARD, W., Mrs., 5 *Rue de l'Eperon*, Paris—Printer and Bookseller.

Natural history of the Mais, of golden birds; description of machinery. The art of rearing silk-worms, &c.

776 BOUCHER, E., & Co., 15 *Rue des Vinaigriers*, Paris—Manufacturers. (Agent, M. DE FONTAINE MOREAU, 4 *South Street*, Finsbury.)

Culinary vases, hardware and trellis; tinned by electro-chemical process. Patent coppered iron wire. Zinc wire, applicable to railings, metallic roofings, horticultural, and other purposes. Wire for carding, preserved from oxidation. Castors on a new principle. The electro-chemical process of tinning employed in the manufacture of these articles, and invented by Mr. Roseleur, is considered cheaper and more effective than any yet discovered.

777 BOUQUILLARD, —, 226 *Rue St. Martin*, Paris—Lithographer.

A frame containing a lithographic plan of Paris.

- 778 **BOURGERY, CAROLINE, 24 Rue Hautefeuille, Paris**—Designer and Proprietor.
Thirty paintings of pathological anatomy, modelled in relief, part of the collection of the Thibert Museum in Paris.
Twelve pictures representing landscapes, with animals, fruits, &c.
The paintings, in relief, of the late Dr. Thibert, form a museum, containing—first, a large gallery of pictures of fruits and animals of every species in graceful and variegated groups; and, secondly, the various phases of human disease, comprising more than 2,000 cases of pathological anatomy, taken from the patients themselves by means of a new process of moulding and painting, which combines solidity of material and durability of colouring.
- 779 **DE BRAUX, D'ANGLURE, 10 Rue de Castiglione, Paris**—Inventor and Patentee.
Articles in bronzed zinc. A lion, by Mr. Rouillard. Two vases, Albani. Bust of Lamartine, by Count d'Orsay. Armed Cupid. Silent Cupid. Exhibited for novelty, accuracy, and cheapness of production.
- 780 **BREE & JOEFFRIN, 81 Rue Richelieu, Paris**—Milliners.
Millinery articles; head-dresses, bonnets, caps, &c.
- 781 **BRISON, P., & SON, Rennes (Ile and Vilaine)**—Tanners.
Specimens of strong and smooth leathers. Crusted calf-skins ready for varnishing.
- 782 **BRONSKI, Major, Count D'BRONNO, au Chateau de St. Selves, near Bordeaux (Gironde)**—Silk-throwster.
Unbleached silk and silk cocoons, the produce of the breed of Bronski silkworms. These specimens are of exquisite whiteness, and far superior in quality to the produce of ordinary silkworms.
- 783 **BUDY, JEAN PIERRE ANTOINE, 13 Rue de la Roquette, Paris**—Manufacturer.
Specimens of kitchen utensils and cast-iron stove.
- 784 **BUISSON, EUGENE, ROBERT, & Co., de Manosque (Basses Alpes)**—Agriculturist.
Three skeins of raw silk.
- 785 **CABASSON, GUILLAUME ALPHONSE, 12 Rue Taranne, St. Germain.**
Drawings on wood for typographical engraving.
- 786 **CABIROL, J. MARTIN, 6 Rue St. Marc, Paris**—Surgical Instrument-maker.
Instruments and apparatus in gutta percha used in surgery. Electro-magnetic tissue and galvanic poultice, by Dr. Récamier.—Patented in France and England, &c.
- 788 **CALLAUD-BELISLE, NOUËL, DE TINAN & Co., Angoulême**—Manufacturers.
Specimens of papers for ledgers, letter-writing, &c.; printing, drawing, and tracing papers.
- 789 **CAMUS, M., de la Rochelle (Charente-Inférieure)**—Producer.
Boxes of sardines preserved in oil.
- 790 **CAMION-PIERREON, Mezières, Ardennes**—Manufacturer.
Iron and brass articles for buildings and furniture.
- 791 **CARNET-SAUSSIER, 95 Rue Rambuteau, Paris**—Manufacturer.
Specimens of preserved food and pickles, both in boxes and bottles; specially truffles and champignons, peas, bottoms of artichokes, French beans, flageolet beans, and every sort of fruit in bottles for hashes and stews. Specimens of vinegar, made of fine herbs and tarragon.
- 792 **CARTEAUX & CHAILLOU, 20 Rue Louis-le-Grand, Paris**—Physicians.
An anatomical model in stamped leather, modelled from actual dissections of the parts represented.
- 793 **CERCEUIL, LOUIS FRANÇOIS, 33 Rue Traversière, Paris**—Manufacturer.
Specimens of dyed and milled wools, and paste colours for paper-hangings.
- 794 **CHAMPOISEAU, NOËL, Tours (Indre and Loire)**—Manufacturer.
Specimens of raw silk, white and yellow. White and yellow hair-west. Sewing silk. Floss silk unbleached and dyed. Organzine silk, &c.
- 795 **CHAPUS & RICHTER, à Wazemmes-les-Lille (Nord)**—Manufacturers.
Specimens of ultramarine of ten different qualities.
- 796 **CHARTRON & SONS, St. Vallier (Drome)**—Silk Spinners and Reelers.
Specimens of raw silk. Specimens of thrown silk. Specimens of silk cocoons.
- 797 **CHATELAIN & BASSET, à la Rochelle (Charente-Inférieure)**—Producers.
Specimens of preserved food.
- 798 **CLAYE, J., Rue St. Benoit, Paris**—Printer.
Eight frames, containing impressions of wood engravings of various styles, as a sample of machine-printing. These engravings are after great masters of both ancient and modern schools:—Albert Durer, Rubens, Rembrandt, Teniers, Ribera, Murillo, Van Ostade, Claude Lorraine, Gericault, Prudhon, Chardix, C. Vanloo, &c.
Two small frames: one of them containing an engraving of "The Virgin and Child," after C. Vanloo; the other, the block from which this engraving was printed.
Another frame: a wood engraving of a vase of flowers, printed on silk by machine.
Three albums, in folio: two of these comprise a collection of wood-engravings; (subjects taken from the great masters). Machine-printed.
A "History of Painters," in one volume 4to; both text and vignettes machine-printed. This book is one of the most beautiful examples of illustration by wood-engraving; and contains impressions from *chefs d'œuvre* of the first masters of all nations. The work is, perhaps, the most beautiful yet produced in French literature, in connection with the fine arts.
The "Fables of Lafontaine," a large octavo volume, with text and vignettes double bordered. The printing of this book was a work of considerable mechanical difficulty, owing to the double bordering that encloses each of its pages.
"Raphael," by Lamartine. Ceramic studies, by Jane de Vaudreuil. Specimens of ordinary machine-printing. The works of Walter Scott. "History of the Crusades," by Michaud. Specimens of machine-printing from stereotype plates. Titles, covers, &c., all printed by machine.
The works of Béranger: a little volume in 32mo, printed in very small type. Machine-printed, and ornamented.

- 799 CLERGET, CHARLES ERNEST, 10 *Rue Albouy, Paris*—Producer.
Frames containing designs and proof engravings.
- 800 COINT-BAYAROT, & SON, 26 *Rue des Capucins, Lyon (Rhône)*—Manufacturers.
Steel and brass weaving-combs of all descriptions.
- 801 COLLAS, MARC ANTOINE CLAUDE, 8 *Rue Dauphine, Paris*—Manufacturer.
White and coloured essence of almonds, and digitaline pine-apple, or ananas.
- 802 COLVILLE, M. & MDLLE., 22 *Rue des Vinaigriers, Paris*—Manufacturers.
Specimen of coloured painting on a square plate of glazed enamel paste: "The Queen and Prince Albert," by Miss Anna Colville.
Specimen of coloured painting on white enamel: "Flowers and fruits."
Specimen of coloured painting on white enamelled iron: "Bunch of flowers."
Complete set of colours for painting on porcelain. Specimen of glazed blue painted plates suitable for an ordinary fire of an oven, and for grounds for painting on porcelain.
A small square plate of porcelain, painted with a deep blue, suitable for grounds and ornaments on china, or for porcelain vases. Specimens of the same on paste-board, prepared as a water colour. This blue is said to be composed of refined cobalt, without any particles of flint, and is said to differ entirely from the German smalt, to which it is superior in colour and durability.
- 803 CHATEAU-CHINON & LEPARE, *Paris*—Producers.
Sheets of the new map of France, drawn by order of the French Government, by the staff-officers of engineers, engraved on the scale of 1 to 80,000, by Mr. Jules Cosquin, chief engraver to the French War-office, 71 *Rue de l'Université, Paris*.
- 804 VESOUL, *Orleans, Moulins et Reims*—Producer.
Plans of towns, engraved on the scale of 1 to 20,000, by Mr. Jules Cosquin, chief engraver to the French War-office, 71 *Rue de l'Université, Paris*.
- 805 COUTEAUX, ALEXANDER ILDEPHONSE, *Taveaux-Pontsericourt (Aisne)*—Inventor.
Apparatus for writing in bed during the night, without light, and without inconvenience.
- 806 COURTÉPÉE-DUCHESNAY, 11 *Rue du Renard, St. Sauveur, Paris*—Tanner and Currier.
Specimens of calf-skins tanned and curried. Boot-fronts and boot and shoe leather. Exhibited for durability and elasticity.
- 807 CURTIAL, —, 9 *Quai de Javel, Grenelle (Seine)*—Manufacturer.
Bottles of artificial ultramarine blue.
- 808 COURTOIS, ETIENNE, *Chaussée de Clignancourt, Paris*—Tanner.
Polished leather for saddlery. Calf-skins polished for boots and shoes.
- 809 CROCO, FRANCOIS, 163 *Rue de Charonne, Paris*—Manufacturer.
Various pieces of cashmere, for waistcoats and comforters.
- 810 CRUCHET, VICTOR, 58 *Rue Notre Dame de Lorette, Paris*—Manufacturer.
Wainscoting for the interior of rooms. Cartons-pierre. Figures of animals in carved oak. Consoles ornamented with basso-relievo.
- 811 DAGAND, —, Sculptor.
Heads—spring, summer, harvest, innocence.
Statuettes—Mr. Dupin, Mr. D'Argout, and Mr. de Thury.
- 812 DAVID, CHARLES, 12 *Rue Mauconseil, Paris*—Manufacturer.
Turkey leather. Shagreen morocco. Shagreen sheep-skin.
- 813 DEADDÉ, L., 18 *Boulevard de Charonne, Charonne (Seine)*—Manufacturer.
Varnished calf leather for boots and shoes, black, coloured, and morocco leather grained.
Black varnished calf-hides, and plain and grained cow-hides, for saddlery.
Black and white heifer and white buffalo hides, for army accoutrements.
- 814 DERAZEY, —, *Mirecourt (Vosges)*—Manufacturer.
Musical instruments and violins.
- 815 DESCARTES, JOSEPH, 6 *Rue du 29 Juillet, Paris*—Cabinet-maker.
Divan arm-chairs, chairs, sofas, and toilet-table; ebony and lacquered articles.
- 816 DESPLANQUE, jun., *Lizy-sur-Ourcq (Seine et Marne)*—Manufacturer.
Machines for washing and cleansing wool. A tool for combing wool. Samples of washed and combed wool. Specimens of woollen yarns, of different colours and qualities.
- 817 DESROISIERS, A., *Moulins (Allier)*—Printer.
Ancient Auvergne and Velay, five volumes folio, with atlas of 150 plates. This beautiful and curious work of the Benedictines, undertaken at the sole expense of the publisher, and under his own care and superintendence, represents with fidelity the monuments and most remarkable events of these two important provinces.
Ancient Bourbonnais, was published some years before the above, at the expense of a few amateurs. The edition of this valuable work is almost exhausted.
Various other works, beautifully illustrated.
- 818 DEVERS, JOSEPH, 32 *Rue d'Enfer, Paris*—Manufacturer.
Terra cottas painted with enamel-paste. Virgin, of enamel-paste on lava. Painting with enamel-paste on china.
- 819 DEYDIER, Mrs., 90 *Rue de l'Ecole, Vaugirard*—Manufacturer.
Zinc vases. Roofing for belfry. Zinc dormer window, &c. Flower-pots.
- 820 DIDIER, FRANCIS, 40 *Rue de Jeuneur, Paris*—Manufacturer.
Design for printed shawl, with appendages.
- 821 DOUBLET & HUCHET, 12 *Rue du Moulins, Paris*—Typographic Engravers.
Two sets of vignettes, and ornamental letters for type-founding, with proof impressions.

- 822 DOUMERC, E., *Jouy, St. Morin (Seine and Marne)*, Director of the Joint-Stock Company of Marais and St. Marie Paper-Mills. Dépôt, 3 *Rue du Pont de Lodi*.

Papers—for type printing, lithography and copper-plate printing, for pencil and water-colours of various descriptions. Cards for Jacquard looms. Filigree paper for bank-notes and share-vouchers. These are used in the banking houses, &c., of France, Italy, Greece, &c. Papers for ledgers, and tradesmen's cards and boxes.

- 823 DOREY, JULES FRANCOIS, *Hâvre (Seine-Inférieure)*—Manufacturer.

A machine for manufacturing the healds of weaving- looms. New system of plates with eyelet-holes for weaving, and machine for making them. In these plates the bend of the eyelet-holes is entirely removed; this takes away an obstruction which, in the action of fulling, often causes the threads of the warp to break. It gives to the eyelet-hole an equal opening both at top and bottom; and greater liberty to the warp to give passage to the little knots in the thread, which are no longer stopped in passing through the eyelet-hole, which often happens in the common plates. The workman no longer requires wire to repair the broken threads, and the length of the eyelet-hole can be much reduced. These plates last longer than the others, and are more regular, being made by machinery.

The machine is remarkable for its lightness; a child of seven or eight years old can make it work during 10 or 12 hours, without fatigue, the work being effected with perfect regularity. This is an entirely new invention.

- 824 DUCEL, S. J., 26 *Faubourg Poissonnière, Paris*—Manufacturer.

Statues with pedestals. Animals. Vases and portions of balustrade with framing. Models for ornamenting buildings, gardens, fountains, churches, and tombs. Statues in iron casting, after the antique, cast at one melting.

- 825 DUJARDIN, LOUIS, 18 *Rue St. Séverin, Paris*—Producer.

Typographic engraving on wood.
Framed engraving.

- 826 DUMONT-PETRELLE, 12 *Rue Thévenot, Paris*—Producer.

Carving on wood—bouquet of flowers; garland of flowers and fruits, gilt and burnished by a process that resists humidity.

- 829 DURAND & BAL, 10 *Rue St. Polycarpe, Lyon (Rhône)*—Manufacturers.

Weaving-combs, with from 220 to 230 teeth in an inch.

- 830 ENFER, —, 32 *Rue de Malte, Paris*—Manufacturer.

Various blowing machines. Cylindrical bellows and light forges. Ventilators for forges and melting-houses. Chemical tables for laboratories, of a novel description. Bellows in metal, without friction; improved enamelled plates. Ventilators with wheels catching in endless screws.

- 831 EYMIEU & SON, *Saillans (Drôme)*—Producer.
Specimens of waste silk, and three fancy skeins.

- 832 FABREGUE-NOURY, SON, HARDOUIN, & Co., *Nîmes*—Manufacturers.

Specimens of silk waste and carded waste silk.

- 833 FAMIN, PIERRE AUGUSTE, 13 *Rue de Berlin, Paris*—Sculptor.

Marble statue, "Billiard-player."

- 834 FAROCHON, EUGÈNE, 47 and 58 *Rue d'Enfer, Paris*—Sculptor.

Marble statue of a boy overloaded with fruit—"Grasp all, lose all."

- 835 FARREL, —, 27 *Rue de Caice, Paris*—Manufacturer. (Agent M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)

Specimens of leaf-gold and leaf platinum.

- 836 FLACHERON-HAYARD, *Place d'Espagne, Besse*—Designer; and at M. DUBAN'S, 17 *Rue de Lille, Paris*, Architect.

Seven views of Rome; and album, with various other views.

- 837 FOUCHER, —, 8 *Rue Salle-au-Comte, Paris*—Engineer.

A small machine for weaving lace slippers. Slippers, with and without soles, manufactured by the machine. Balls of lace used in the manufactory.

- 839 GAILLET-BARONNET, *Sommepey (Marne)*—Wool-spinner.

Wool spun by the hand, for the manufacture of veils, barège dresses, and other very light articles.

- 841 GATTIKER, GASPARD, 80 *Rue des Marais St. Martin, Paris*—Designer.

Designs for printed shawls. Dress, and samples of fabrics for dresses.

- 842 GAUDET DU FRESNE, 41 *Rue Richelieu, Paris*—Manufacturer.

Specimens of artificial leaves for the manufacture of artificial flowers, of the finest quality.

- 843 GAUME & Co., 4 *Rue Cassette, Paris*—Producer.
Books:—Works of St. John Chrysostom, St. Basil, St. Augustin, &c.

Two volumes coloured paper, sewn.

- 844 GAUTROT, sen., 60 *Rue St. Louis (au Marais)*—Paris—Manufacturer.

Musical instruments: horns, cornets, trumpets, clarions (chromatic), counter bombardons, ophicleides, trombones, &c.

- 845 GELLÉ, sen., & Co., 35 *Rue des Vieux Augustins, Paris*—Producer.

Perfumery: toilet soaps; hair dyes; bandoline; Parisian vegetable powder; milk of roses; almond paste.

- 846 GIBELIN & SON, *La Salle (Gard)*—Silk-spinners.
Specimens of raw silk, white and yellow.

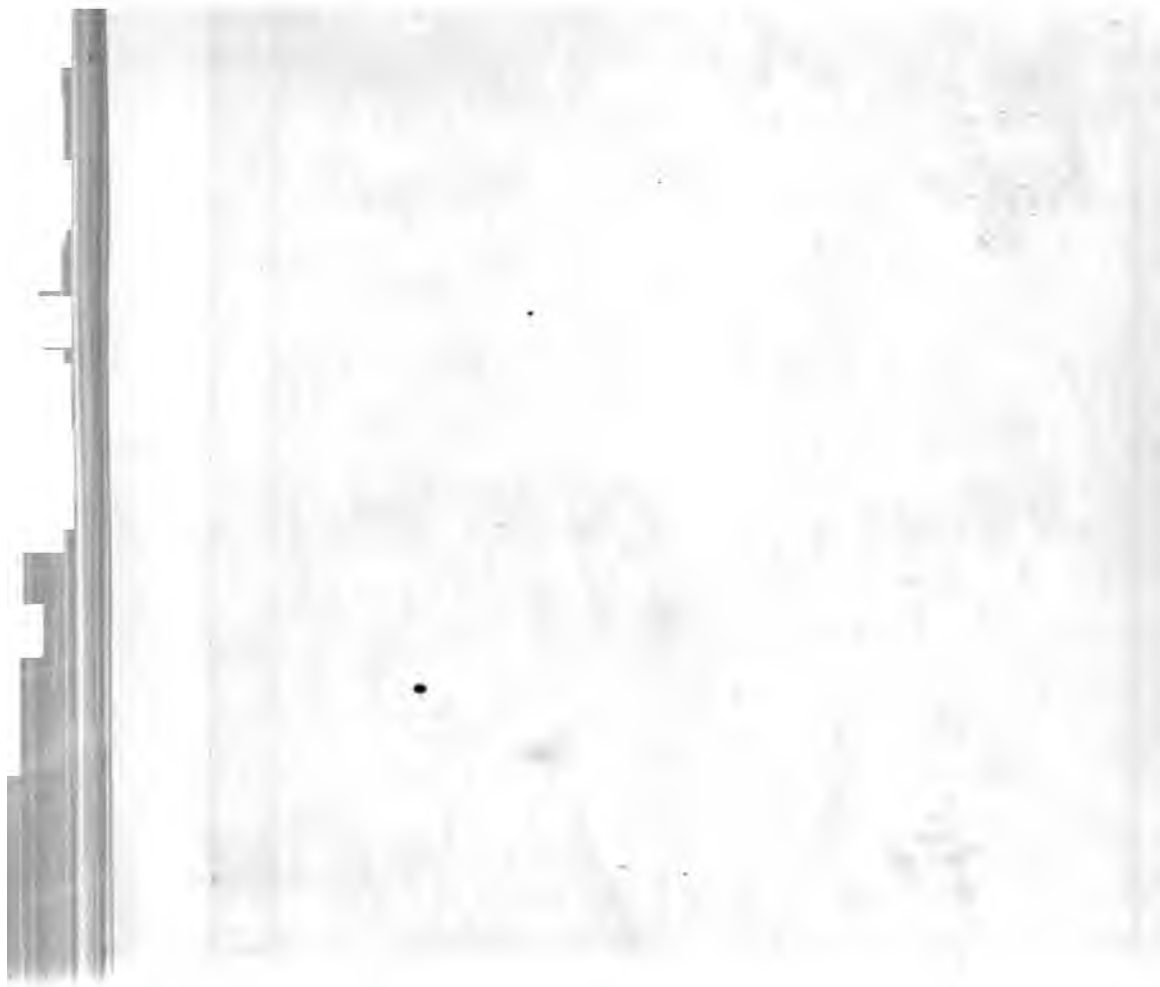
- 848 GILLE, JEAN MARIE, 28 *Rue Paradis Poissonnière, Paris*—Manufacturer.

Statuettes, vases, flagons, decanters, and various other articles of white and ornamented porcelain.

- 849 GILLOT, F., 19 *Rue du Pont-aux-Choux, Paris*—Manufacturer.

Bronze and gilt clocks and candelabra, various compositions and groups with marble. Clock—"The Birth of Venus." Candelabra—"Hunting and Fishing." Clocks—"Nymph at the Spring." Candelabra—"Boys standing." Clock—style Louis XVI. Clock—"Innocence." Candelabra—"Boys sitting down." Pair of flagons. Group in bronze, "Hunting the Stag," on black marble. Pair of bronzed and gilt candelabra.





- 850 GIRAUD BROTHERS, 38 *Rue du Fer-à-Moulin, Paris*—Tanners.
Morocco skins and moroccoed sheep-skins, for book-binding and portfolios, furniture, and boot and shoe-making.
- 851 GOLDENBERG, G., & Co., *Zornhoff, near Saverne (Bas-Rhin)*—Manufacturers.
Various articles of hardware and edge-tools.
- 852 GOUBE-PHÉRACE, *Douai (Nord)*—Manufacturer.
Wrought leather for cards, spinning-machines, and military accoutrements.
- 853 GRAILLON, PIERRE ADRIEN, *Dieppe (Seine Inférieure)*—Producer.
Groups in terra cotta.
- 854 GRATIOT, AMÉDÉE, 8 *Rue Vivienne, Paris*—Director of the Paper Mills at Essone.
Vegetable tissue papers, made from the fibres of the banana; letter papers, white and blue, wire woven by machinery; printed papers of various patterns and qualities; papers for flowers, called "Serpentines."
- 855 GRIMONPREZ & Co., *Roubaix (Nord)*—Manufacturers.
Woollen fabrics for dresses, shawls, and aprons. Woollen fabrics for hangings.
- 856 GROSSMANN & WAGNER, 11 *Rue de Renard St. Sauveur, Paris*—Manufacturers.
French and American shoes, slippers, boots, and half boots, sheets, thread, pipes, lozenges, moulded and hollowed balls.
India-rubber surgical instruments: catheters, bougies, pessaries, nipples, sucking bottles, ear trumpets, urinals, bandages, varicose stockings, and cautery-plates.
Waterproof clothes, dresses, mattresses, clothes for ladies and gentlemen, brodskins, air cushions, clyster pipes, nurse's aprons, &c., braces, garters, bracelets, girdles.
Specimens of pure, manufactured, coloured, vulcanized, and dissolved India-rubber.
- 857 GRUEL, —, 10 *Rue de la Concorde, Paris*—Producer.
Bound books:—Missal, mosaic volumes, Bibles, Prayer-books, &c.
- 858 GUERRE, sen., *Langres (Haute-Marne)*—Cutler.
Various samples of cutlery.
- 859 GUESNU, —, 16, *Rue Portefoin, and 14 Rue Aumaire, Paris*—Producer.
Lithographic printing. Embossed papers.
- 860 GUILBERT & WATEAU, *Rue St. Fiacre, Paris*—Manufacturers.
Woollen fabrics, woollen and silk mixtures, unbleached and dyed.
- 861 HAMANN, EMANUEL FERDINAND, 43 *Quai des Augustins, Paris*—Inventor.
A calculating planimeter.
- 862 HAMM & Co., 6 *Place de l'École de Médecine, Paris*—Surgical-instrument Maker.
Instruments for cataracts, amputations, trepanning, and lithotripsy. Trusses, and various cutlery instruments, for surgery, &c.
- 863 HARAND, EDOUARD, 15 *Rue de Choiseul, Paris*—Artificial Flower-maker.
Head-dresses, gown-trimming in roses, on ivy and rose ground.
- 864 HARDING, COCKER, 6 *Rue de Metz, Lille (Nord)*—Manufacturer.
The model of a machine for combing flax, wool, and silk. A machine for combing wool, ready for work. Various articles connected with the spinning of flax, wool and silk, such as gills, cylindrical combs, &c.
- 865 HARDOUIN, —, 26 *Rue de Bréda, Paris*—Producer.
Ornaments in plastic carving: lustre roses; looking-glass frames.
- 866 HARO, ETIENNE FRANCOIS, 18 *Rue des Petits Augustins, Paris*—Manufacturer.
Canvas for historical painting; fine colours; varnish; specimen of new process for restoring pictures.
- 867 HARTWECK, EDOUARD, 14 *Rue de Mail, Paris*—Designer.
Designs for long and square shawls.
One of these designs is represented in the accompanying Plate, 200.
- 868 HYPOLITE, MADAME, 21 *Rue de la Michodière, Paris*—Stay-maker.
Corsets of various descriptions.
- 869 HÉBERT, LOUIS ANTOINE, 252 *Rue St. Martin, Paris*—Manufacturer.
Varnish for boots and shoes.
- 870 HECKEL, sen., & Co., 14 *Rue des Capucins, Lyon (Rhône)*—Manufacturers.
Plain satins of different tints.
- 871 HENRI, FÉLIX, 47 *Rue du Vert Bois, Paris*—Jeweller.
Specimens of boxes, cups, brooches, pins, &c.; imitations of jewels.
- 872 HÉRAULT, —, 22 *Rue Neuve St. Eustache, Paris*—Designer.
Set of designs for shawls.
- 873 HERMANN, GEORGE, 92 *Rue de Charenton, Paris*—Machine-maker.
Machine for grinding chocolate, colours, and pharmaceutical produce.
- 874 HERMANOWSKA, M. *Troyes (Aube)*—Producer.
Stained glass, in the style of Louis XV.
- 875 HOFER, HENRI, & Co., *Kaysersberg (Haut-Rhin)*—Cotton-spinners.
Spun cottons, bobbins, skeins, wefts, and warps.
- 876 HOLSTEIN, JEAN PAUL, *St. Etienne (Loire)*—Producer.
Terra cotta mouldings.
- 877 HONORÉ, ED., 6 *Boulevard Poissonnière, Paris*—Manufacturer.
Specimens of white and gilt porcelains.
- 878 HOUZEAU, ETIENNE, 33 *Rue de l'Arbre Sec, Paris*.
Specimen of paper for tracing, manufactured by a new process.
- 879 HUBER, CÉSAR EUSÈBE, 29 *Rue Bergère, Paris*—Producer.
A door in the style of Louis XIV.; niche and pilaster of a figured freize, in renaissance style; caryatides, medallions, vases, and capitals.
- 880 HUET, J., *Rue Pastourelle (Marais) Paris*—Manufacturer.
Trimming for purses; bead reticules; buckles, brooches, bracelets, and pins, &c.

881 HUGUES, JEAN JOSEPH, & SON, *Grasse (Var)*—
Producers.

Bottles with various essences.

882 HULOT, ANATOLE, *Hotel des Monnaies, Paris*—
Assistant Engraver to the Mint.

Proofs on paper of relievé engraved plates; bank notes; playing cards; stamps, &c.

883 HUNZER, JACQUES, *Bischwiller (Bas-Rhin)*—
Manufacturer.

Various kinds of drapery; black satin, black cloth, china satin, twilled amazon, &c.

884 HURTREL & Co., *Moulins, Lille (Nord)*—
Manufacturers.

Specimen of a mode of riveting steam boilers, consisting of four strong iron plates manufactured by machinery, and firmly riveted by a riveting machine of new invention, by which the nails are riveted at a single blow. A piece of the specimen sawed in two to show the strength of the rivet, and the mode of joining the iron plates.

885 HUSSON & BUTHOD, 13 and 15, *Rue Grénetat, Paris*—Manufacturers.

Specimen of violins, guitars, barrel organs, and silk first-strings.

886 JACOBS & DUPUIS, 32 *Rue de la Paix, Paris*—
Shoemakers.

Samples of ladies' and children's boots and shoes.

887 JAUDIN, A., 15 *Rue de la Croix St. Martin, Paris*—
Manufacturer.

Specimens of tinfoil and coloured spangles.

888 JAYET, C., 10 *Rue Geoffroy Marie, Paris*—Designer.
Designs for fabrics.

889 JEANSELME, JOSEPH PIERRE FRANCOIS, 93 *Boulevard Beaumarchais, Paris*.

Cabinet-work: oak sideboard, dressing-room furniture, arm chairs, and chairs (Louis XV. style). A gilt console, richly carved in the style of Louis XV.; chairs, Etruscan style, inlaid with coral wood.

890 JOLLY-LECLERC, 38 *Faubourg St. Antoine, Paris*—
Cabinet-maker.

Carved wardrobe in rosewood, with a mirror and small étagère.

891 JOLY, JN. MARIE, *St. Malo (Ile and Vilaine)*—
Ropemaker.

Specimens of rope-work for shrouds.

892 JOLY, SISTERS, 45 *Rue Neuve St. Augustin, Paris*—Maufacturer.

Fancy white satin, white drill, mohair, &c.
Stays; with trimmings of every kind.

893 JOUVIN, Mme. XAVIER, *Grenoble (Isère), and 18 Boulevard Poissonnière, Paris*—Manufacturer.

Skins for gloves; ready-made gloves; patent punches, or tools for cutting out gloves. These gloves are manufactured by an improved process. The punches for cutting them out are represented in figs. 1, 2, 3, 5, and 6 of the following cut. Fig. 4 shows the piece cut out.



- 894 KÖPPELIN, E., 17 *Quai Voltaire, Paris*—
Lithographic Printer.

Specimens of lithographic printing.

The method employed by the exhibitor has been applied to the production of damask grounds, the traces of which are almost imperceptible to the naked eye. It is produced by a turning lathe on a steel plate.

Two engravings of the hemispheres, produced by the single impression of two plates, one of which gives the outlines, the names, and the waters, and the other, engraved by machinery, the shading or the sphericity. Large topographical map of the department of Meaux, about four feet by three, also produced at a single impression, by the transference to stone of six copper-plates of the map of France. This operation was effected with such accuracy that the most practiced eye cannot discover the marks of the places where they are joined.

- 895 LABOULAYE, CHAS., & Co., 30 *Rue de Madame, Paris*—Type-founder.

Typographic proof-sheets, and specimens of printing.

- 896 LAMORT, GEORGIN, *Rethel (Ardennes)*—
Manufacturer.

Specimens of unbleached and dyed merino fabrics.

- 897 LAUDE, AMÉDÉE, 19 *Rue de la Roquette, Paris*—
Manufacturer.

Cast-iron bedstead ornamented with bronze, and an elastic spring.

- 898 LANGEVIN & Co., *Laferté Aleps (Seine and Oise)*—
Floss-silk Thread-spinner.

Floss and thrown silk of various qualities.

- 900 LAPORTE & SON, *Limoges (Haute-Vienne)*—
Manufacturers.

Specimens of double-milled cloths, light grey, plain Marengo, &c.

- 901 LAROQUE & JAQUEMET, *Bordeaux (Gironde)*—
Manufacturers. (Agent, J. S. DE GAETAN, 3 *Bow Lane, Cheapside*.)

Samples of manufactured hides; lamb-skins for g'oves; sheep-skins for leather; white skins and skins dressed for chamois leather. Assortment of spun wool for knitting; woollen blankets of various qualities; short-napped carpets; carpets made in one piece, peculiarly adapted for large drawing-rooms, &c.

- 902 LAURENT, JN. BTE., 40 *Rue Rambuteau, Paris*—
Lace-maker.

Specimens of twists, silk buttons, and other articles of trimmings.

- 903 LAURET BROTHERS, 19 *Rue des Mauvaises Paroles, Paris*—Hosiery. (Agents, GRAETZER & HERMANN, 3 *Huggin Lane, Wood Street*.)

Stockings, socks, gloves, and mittens of silk and cotton. Gloves, mittens, and neckerchiefs of silk. Thread gloves; Scotch thread, silk poplin, cashmere, and various other articles.

- 905 LAZARE & LACROIX, *Avignon (Vaucluse)*—Manu-
facturers. (Agent, L FOINGNINOS, *Commercial Sale Rooms, Mincing Lane*.)

Thread, silk, and cotton handkerchiefs.
A sample of garancine.

- 906 LEBRUN, LOUIS JACOB, 126 *Rue de Grenelle, St. Germain, Paris*—Bookbinder.

Specimens of bookbinding; Lewis's Sketches; Napoleon in Egypt, &c.

- 907 LEFEBVRE, SON, & Co., *Lille*—Manufacturers.

A glazed wardrobe in chestnut wood, inside of oak, and pannels of cedar wood.

- 908 LEISTNER, GUSTAVE LOUIS, 48 *Rue de Chaillot, Paris*—Manufacturer.

Eau de Paris, a cosmetic intended as a substitute for Eau de Cologne, or other cosmetics. For internal use it is employed instead of Eau de Melisse de Carmes. Ten or twelve drops, in half a glass of sugar and water, are a dose. By adding a quarter of a bottle to a cold or hot bath, it makes a pleasant perfume. The Eau de Paris also takes out spots, by washing the injured material with it mixed with filtered water. A piece of cotton or linen, impregnated with it, preserves woollen stuffs from the moths, without occasioning any disagreeable smell.

Aromatic vinegar, a mixture of Eau de Paris and pure vinegar, for refreshing the air of apartments, by slightly sprinkling them with it.

Powder for the preservation of the teeth. This powder is free from acids and other substances likely to injure the enamel.

Elixir for preserving the teeth and gums. This dentifrice is prepared with fresh plants, and other substances adapted for the preservation of the teeth.

Odontalgic mastich. This chemical composition preserves the teeth by solidly filling them up, and of removing violent tooth-ache, proceeding from decay. In using it, the decayed tooth must be carefully cleaned out, and a small piece of lint or wool dipped in the composition, introduced by pressure.

- 909 LEMONNIER & Co., 1 *Rue du Coq St. Honoré, Paris*—Jewellers.

A large portrait of Her Majesty Queen Victoria; several landscapes, tombs, bouquets, &c., in hair. An assortment of ornamental jewellery, with hair interspersed, and set in diamonds, pearls, &c.; including bracelets, rings, Leontine chains, Albert chains, &c., with a variety of other fancy articles.

- 910 LÉPINE, FS. DS., 19 *Rue des Vinaigriers, Paris*—
Manufacturer.

Specimens of clasps for gloves.

- 912 LHOEST, CI. VR., 14 *Rue Pastourelle, Paris*—
Manufacturer.

Various reduced designs in basso relievo, from sculpture, effected by a new and original mechanical process.

- 913 LOMBARD, —, 5 *Rue Thorigny, Paris*—
Ornamental Carver.

Looking-glass and picture-frames, ornamented in every style. Bronze articles.

Furniture and console vessels.

A large assortment of ornamental moulds of all descriptions, for the use of carvers and gilders.

Clocks, candelabras, and fancy articles.

- 914 LUNDY, JULES AUGUSTE VICTOR, 2 *Rue Chapon, Paris*—Producer.

Paleographic designs. Manuscript of the fifteenth century on parchment, mediæval style.

- 915 MAEHLI, —, 69 *Rue du Rocher, Paris*—Inventor.

Plan of a machine for extracting oil from bituminous schist.

[It is a singular fact, which is now assuming much commercial prominence, that a considerable quantity of a fluid (hydrocarbon), commonly known as mineral oil, may be extracted in various ways from bituminous schist. By

distillation this oil can generally be separated from the substance in which it occurs. The oil thus derived is applicable to combustion in lamps, for which it has been already extensively employed. The extraction of the oil, however, by the ordinary process of distillation, has been generally found to render it too costly for extensive use. The method exhibited, and which illustrates an improved plan of distilling the raw material, is as follows. The retorts used are of sheet-iron, and are placed horizontally in a reverberating furnace, and heated until they are red-hot, at which temperature they are uniformly kept by careful attention to the furnace. The lumps of bituminous schist are spread out uniformly on shelves of sheet-iron perforated with holes, and placed one above the other, so that a large surface of the schist is exposed to the heat. Under these circumstances a quantity of oil is disengaged, and condensed in a reservoir of cold water. A large quantity is thus extracted, greatly exceeding the ordinary yield of this material. Products of various kinds from the same material are exhibited in Class I. of the United Kingdom.—R. E.]

916 MEISSONNIER, —, 8 *Rue Meslay, Paris*—
Manufacturer.

Specimens of colours and dyes.

917 MANSON, EDOUARD, *Nantes (Loire-Inférieure)*—
Manufacturer.

Specimens of japanned calf-leather.

918 MANTOIS, Mme. ELISA, *Rue du Pont de Fer, St. Sulpice, Paris*—
Manufacturer.

Zinc white, prepared for painting in water colours and in oil, said to be of the finest white, of a moderate price, and in its use as easy as ceruse; that it has as much body as white lead, surpasses it in whiteness, and is unalterable, resisting the most powerful tests.

919 MARS, —, 20 *Rue de la Cerisaie, Paris*—
Inventor.

A mechanical loading-machine, or an apparatus uniting with the scales the power of the screw-jack.

920 MARRAT, FRANÇOIS, *Angoulême (Charente)*—
Manufacturer.

Flat and square iron refined by charcoal.
Cast-iron for the artillery.

921 MARTEL, GEOFFRAY & VALENSOT, *Lyon, Rhône*—
Manufacturers.

Specimens of fancy silk cravats and collars.

922 MARTIN DE LIGNAC, —, *Mont Levade, Commune de St. Sulpice (Creuse)*—
Agriculturist.

Boxes of concentrated milk. Patented in England. The milk, thus prepared, preserves its flavour and nutritive qualities for any length of time, and in any climate. By dissolving and boiling one-sixth of the article exhibited in five-sixths of water, an excellent milk is obtained.

923 MATIFAT, CHARLES STANISLAS, 9 *Rue de la Perle, Paris*—
Manufacturer.

Clocks, chandeliers, and various articles in bronze. Works of art of all kinds in bronze. Mirror in the style of Louis XV., with drawers and four branches; on the stand is a little group, representing the toilet of Venus. Statuette in bronze. "Susanna at the Bath." Large bronze vase in the Assyrian style, by G. Deaterle and Playmann, of exquisite workmanship and finish. (*Main Avenue.*)

Greek, Etruscan, and mediæval cups. Centre-piece in solid silver, weighing 78 lbs.

A silver vase, with figures. This vase is represented in the Plate 256.

Clock in carved ivory, in the style of Pompeii; on the top is a group representing a mother dancing a child on her knee, and in the centre a painting representing the past, present, and future. The accompanying Plate represents this clock.

A large wardrobe, Louis XIV. style, with bronze carvings.

A Moorish clock; another with foliage and birds; candelabra, cups, writing stands, &c., in bronze, with bells, hunting-knives, &c.

924 MAUZAIZE, JEAN NOEL, 4 *Impasse St. Michel, Chartres (Eure and Loire)*—
Inventor.

Machine for isolating motion, applicable to flour-mills.

925 MENIER & Co., 37 *Rue St. Croix de la Bretonnerie, Paris*—
Manufacturers.

A variety of medicinal substances, reduced to impalpable powder.

Oats and barley deprived of their first pellicle, and known under the name of groats and of hulled barley.

Barley dressed by a mechanical process, known under the name of pearl barley, on account of its analogy of form with small pearls. The merit of these two products consists in the brightness and finish of the grain.

Various qualities of chocolate.

Pharmaceutical extracts obtained by steam.

926 MERLIÉ, LEFEVRE, & Co., *Rope Factory, Havre*—
Manufacturers.

Specimens of cables and cordage. The exhibitors manufacture yearly 1,320,000 lbs. of rope. The processes of tarring the yarn, and winding on the bobbins and reels, are peculiar. The machinery for cable-making works with the greatest regularity and economy, and produces the strongest ropes for shipping. Thus, in 35 minutes, by means of this apparatus, with the aid of six men only, the shroud of 13 inches in circumference, which he has exhibited among the specimens, was produced.

927 MERCIER, —, 100 *Faubourg St. Antoine, Paris*—
Manufacturer.

Drawing-room furniture. Cupboards with mirrors. A bed, chest of drawers, &c.

928 MEURISSE, —, 1 *Rue du 29 Juillet, Paris*—
Corset Maker.

Specimens of fancy corsets.

929 MILLIAU, —, jun., *Marseille (Bouches-du-Rhône)*—
Soap-maker.

Various samples of soap.

930 MILON, PIERRE DOMINIQUE, sen., 98 *Rue St. Honoré, Paris*—
Manufacturer.

Specimens of silk stockings of all descriptions. Trousers, swaddling cloths, and various articles of hosiery.

931 MORISOT, —, 12 *Rue de la Cerisaie, Paris*—
Manufacturer.

Works of art in bronze.

Andirons, tongs, tong-stands.

Vases and statuettes or groups.

932 MOTTET, C., *Rue des Trois Bornes, Paris*—
Producer.

Orchil for dyeing and printing stuffs.

933 MOUSSILLAC, AMAND, *La Réole, Gironde*—
Producer.

A twelve-circle mill of Acacia.



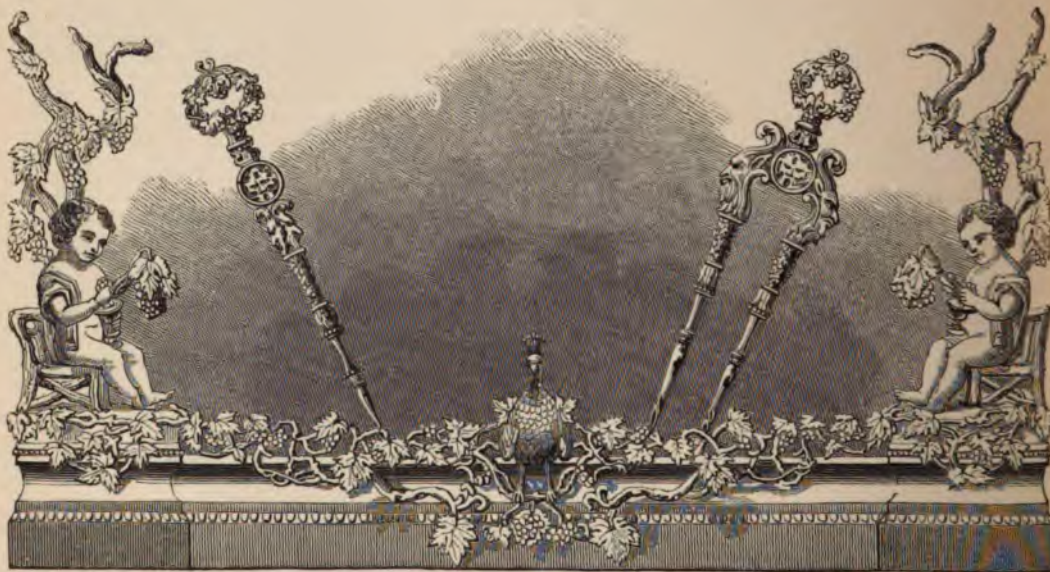
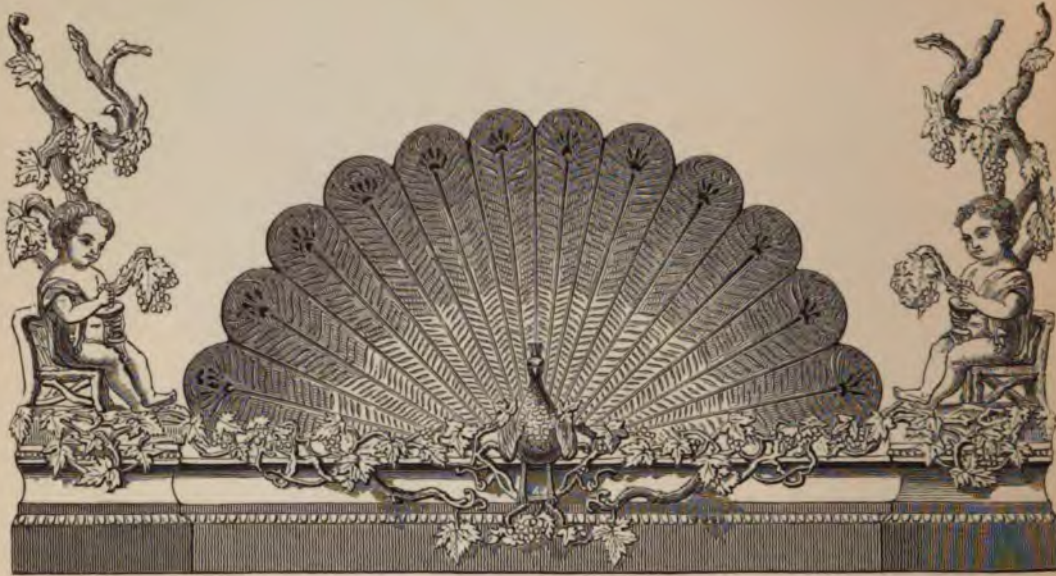
SILVER VASE. M. MATIFAT. FRANCE.





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JARVIS

- VEL WAHL & Co., Tusey Iron Works, near Fauconleurs**—Producer. (Agent, A. BROCHON, 113 Rue du Faubourg St. Denis, Paris.)
 Patterns for buildings, enclosures, gardens, gaslights, and public places.
 Cast-iron and funereal articles. Household articles of iron in first and second state of fusion on designs or drawings.
- VELLUS, —, jun., Gravelle, near Havre (Seine-Inférieure)**—Inventor.
 Hydraulic pump for straining.
- VILLIERS, FRANÇOIS, 14 Chemin de Ronde de la Barrière des Vertus**—Manufacturer.
 Apparatus for filtering water.
- VIGNAREDE, JEAN LOUIS, St. Jean-du-Gard**—Producer.
 Reeling of raw silk.
- VINCENT, SOHN, & Co., Courtalin (Seine and Marne)**—Manufacturers.
 Knives made by machine and by hand.
- VIRET, J. L. M., 13 Rue Culture, St. Catherine, Paris**—Manufacturer.
 Household and toilet soaps and perfumery.
- VIGNERRE, —, 18 Rue de Seine, Paris**—Bookseller and Publisher.
 Two volumes of various kinds.
- VOISIN DE BEAUVOY, C., Seiches (Maine and Loire)**—Producer.
 Tools with their appendages in wood and straw.
- WALMER, JEAN LAURENT, 16 Rue Montmorency, Paris**—Wire-drawer.
 Specimens of drawn wire, welding, and wire-gauging.
- WATTE, JEAN HENRY, 19 Rue des Bons Enfants, Paris**—Manufacturer.
 Square and console pianofortes; square and upright table pianofortes; grand pianoforte, with patent improved sounding board.
- WATTE, PARENT, —, 33 Rue des Arcs, Paris**—Manufacturer.
 Scales and balances for mercantile and chemical purposes.
- WATTE, PABOISSIEN, A., 12 Rue St. Oppolime, Paris**—Manufacturer.
 Patterns of wax leaves. Ladies' head-dresses.
- WATTE, PAUBLAN, JEAN, 366 Rue St. Honoré, Paris**—Locksmith and Machine-maker.
 Locks and locks on various systems. Specimens of iron or steel security against theft and fire.
- WATTE, RIGNE, VICTOR JULIEN, Nort (Loire-Inférieure)**—Inventor.
 Weapon of new invention. This weapon presents itself a mechanical contrivance, with capacious passage.
- WATTE, PELLIER BROTHERS, Mans (Sarthe)**—Manufacturers.
 Cans and boxes of preserved meat. Apparatus for opening the boxes.
- WATTE, LITTEAUX, FRED., jun., Château Renaud (Indre and Loire)**—Manufacturer.
 Bags and mens of various kinds of leather.
- 950 **PESCAT, JOSEPH, La Musée, near Nantes (Loire-Inférieure)**—Manufacturer.
 Boxes of truffled game, sardines, green pease, and various preserved meats; bottles of fruits.
- 951 **PEROT, GABRIEL JEAN, sen., 8 Rue Mandar, Paris**—Engraver.
 Specimens of engraving, and inlaying on steel.
- 952 **PERROT, PETIT & Co., 12 Rue de la Boucse, Paris**—Manufacturers.
 Artificial flowers; fancy feathers for dresses; gold, silver, and pearl embroidery, &c.
- 953 **PETITCOLIN, JULES, 2 Place Dauphine, Paris**—Engraver.
 Proofs of engravings on copper-plates by machinery.
- 954 **PETITHOMME, L. A., 243 Rue St. Jacques, Paris**—Engineer and Founder.
 Chime of four bells, exemplifying the exhibitor's patent system of suspension for bells.
- 955 **PEYRON, SILVAIN, Rumengol, near Brest (Finistère)**—Manufacturer.
 Specimens of beech saw-blades, sawn and bent by steam machinery.
- 956 **PHILIPPE & CANAUD, Ville-en-Bois, Nantes (Loire-Inférieure)**—Manufacturers.
 Bottles and flacons, containing preserved food, meats, vegetables, fish, &c.
- 957 **PIERON, —, 13 Rue des Enfants Rouges, Paris**—Manufacturer.
 Specimens of fenders, with shovels and tongs, gilt and oxidized, or gilt and beamed. Patent screen. This screen attached to the fender, with the fire implements, is represented in the accompanying Plate 230.
- 958 **PIERRET, JOSEPH BENOIT, 20 Rue de Broda, Paris**—Manufacturer.
 A rotatory steam engine of 10 horse power.
- 959 **PIRELLI, —, sen., 305 Rue St. Martin, Paris**—Brush-maker.
 Samples of brushes for painting.
- 960 **PIRELLI, VICTOR, 24 Rue Paris, au Marais, Paris**—Manufacturer.
 Gelatine flowers, ornaments and bouquets. Gelatine cylinders of various colours.
- 961 **PIRELLI, ISIDORE, Moulins-les-Lille, Manufacture.** (Agent, Mr. GASTON BOUCHARD, Rue du Château, St. Méd., Paris.)
 Specimens of ceruse, or white-lead.
- 962 **PIRELLI BROTHERS, Brest (Finistère)**—Producer.
 Body of a cenotaph of granite.
 The material of which this cenotaph is composed, is not granite, but a kind of greenstone-trap, exceedingly tough, and difficult to work. It is obtained from the igneous rocks of the north-western part of France, and is probably used in the absence of a better material.—D. T. A.
- 963 **POIRIER, LAURENT, 33 Rue du Faubourg St. Martin, Paris**—Machine-maker.
 Copying-presses; presses for sealing letters; auto-graphic presses; stamping machine; travelling press for laboratories. Registered and patented.
- 964 **POTOSIÉ, 5 Rue Neuve St. François**—Manufacturer.
 Clocks of various descriptions and patterns of china, marble, bronze, and other materials.

- clocks; clocks with mechanical singing birds. Clock, with subject, "Great Britain protecting Art and Industry."
- 965 **POULAT, A.**, 6 *Cours de Brosses, à la Guillotière, Lyon (Rhône)*—Manufacturer.
Brass drawing-plates, with holes set in rubies, for drawing all kinds of metals into wires.
- 966 **POULLOT, —**, 35 *Rue St. Louis (Marais), Paris*—Optician.
Specimens of eye-glasses; nose pinchers, monk-faces, spectacles, &c.
- 967 **POUYER, Rouen (Seine-Inférieure)**—Mechanist.
Apparatus, available for a 40-horse power, enabling any number of movers to be connected or disconnected at pleasure.
- 968 **PECQUEUR, —**, 11 *Rue Neuve Popincourt, Paris*—Engineer. (Agent, M. de FONTAINE MOREAU, 4 *South Street, Finsbury*.)
Specimen of fishing-net, made by a machine, one of which was made for Grundy & Co., of Bridport.
- 969 **PROUTAT, MUTROS & THOMERET, Arnay-le-Duc (Côte-d'Or)**—Manufacturers.
Samples of tools and files.
- 970 **PROVANCHER, BERTRAND, Place du Château Rouge, Montmartre**—Manufacturer.
A China plate, with lithographic application, representing Queen Victoria and the Royal Family in one of the galleries of the Palace.
- 971 **RAGOT, JULES FELIX, 39 Boulevard St. Martin, Paris**—Designer.
Design for a white lace counterpane, Brussels application, without trimmings.
- 972 **RAGOT-MAYEUX, Reims (Marne)**—Manufacturer.
Unbleached and dyed merino fabrics, of different qualities.
- 973 **RANDOING, JOHN, Abbeville (Somme)**—Manufacturer.
Fine cloths: fine beaver, a variety of cashmeres, summer satin, &c., dyed in every variety of shade.
The royal manufactory of Abbeville was established by Colbert, on a very extensive scale, and has ever since been remarkable for the excellence of its manufactures.
- 974 **RAPP, C. F., 21 Rue Feydeau, Paris**—Bootmaker.
Various descriptions of shoes and boots for men and women.
- 975 **REBERT, CHRÉTIEN, 25 Place du Dome, Strasbourg (Bas-Rhin)**—Inventor.
Various patterns of door fastenings, with single wires or with spiral rods. Patented.
- 976 **RÉDELIX, CYPRIEN HUBERT, 357 Rue St. Denis, Paris**—Manufacturer.
Specimens of flower-makers' tools.
- 977 **RÉMOND, N., Rue du Foin St. Jacques, Paris**—Producer.
Wooden frames, containing proofs coloured, but not touched up with a pencil, and a painted signboard.
- 978 **RENARD, —**, 28 *Rue des Gravilliers, Paris*—Cutler.
Tools for all kinds of engraving.
- 979 **RENAUD, —**, 6 *Rue St. Foix, Paris*—Manufacturer.
Specimens of metal foundry of all descriptions.
- 980 **RICHARD BROTHERS, St. Chamont (Loire)**—Manufacturers.
Specimens of silk gimp, or trimming.
- 981 **RENARD & SON, Fresnes, near Condé (Nord)**—Manufacturers.
Window-glasses—white, half-white, and common; and fluted glass. The exhibitors have six melting furnaces, producing monthly about 484,000 English square feet of glass.
- 982 **RENODIER & SON, St. Etienne (Loire)**—Cutlers.
Steel-bladed knives, called *Hustaches*. The blades of steel are from the department of Isère, the handles are of box-wood, coloured and painted by hand.
- 983 **REPEYRE, SABIN, 9 Rue des Fossés Montmartre, Paris**—Manufacturer.
Specimens of figured woollen shawls and scarfs.
- 984 **REYDOR BROTHERS & COLIN, 17 Rue Jean-Robert, Paris**—Manufacturers.
Various systems of clocks.
Regulators and kitchen-jacks.
- 985 **RIBY, PIERRE, Angers (Maine and Loire)**.
Mill-stones for grinding corn.
- 986 **RICROCH, N., & Co., Limoges (Haute-Vienne), (China Workmen Society)**.
A variety of articles—white china table service.
- 987 **RIVAUD, GUSTAVE, Petit Rochefort (Charente)**—Producer.
Fleeces of superfine merino-wool.
- 988 **ROBAUT, L., Douai (Nord)**—Tanner.
Tanned and curried leather for cards and military accoutrements.
A square cow's hide, for cotton cards. Plates for wool and cotton cards. Plate for cotton card, calf-skin. Bands for wool card. Band for cotton card. A square cow-hide, curried for military accoutrements. Calf-skin polished, for shoemakers. Calf-skin roller, for spinning. Pair of boot-legs, cow leather, for the military. The same in calf. A side of black leather, ox-hide, for harness. Manufactured skins for hydraulic presses. Small leather skins for hat manufacturers.
- 989 **GALLAND, ROBERT, Pont-Faverger (Marne)**—Manufacturer.
Specimens of Merino fabrics unbleached and dyed.
- 990 **ROCHE & DIME, 1 Place Romarin, Lyons (Rhône)**.
Manufacturers.
Three fancy silk shawls.
- 991 **ROCHER, MICHEL, Nantes (Loire Inférieure)**—Inventor.
An apparatus for distillation. Patented in England. Submarine condenser that cannot be heated.
- 992 **RODEL & SON, Bordeaux (Gironde)**—Manufacturers.
Specimens of preserved food.
- 993 **ROTH, G. C., Strasbourg (Bas-Rhin)**—Manufacturers.
Brass and wooden musical instruments.
- 994 **ROUCHIER, F., & SON, Ruffec (Charente)**—Manufacturers.
Specimens of Rheims biscuits, and preserved green pease.
- 995 **ROUX & FORTIN, 21 Rue d'Anjou (Marais) Paris, and 9 Sackville Street, Piccadilly, London**—Manufacturers.
New patent revolving castors, seven sets of four each, numbered 30, 40, 50, 60, 70, 160, and 170. These castors, constructed on a new principle, are exhibited for their strength, durability and form; their novelty consists in



a revolving ball, which turns in any direction required, and which, being fixed perpendicularly on an article of furniture, is capable of supporting the entire weight, without much friction or oscillation.

996 SAINT-JEAN, —, 2 *Quai Fulchiron, Lyons (Rhône)*—Painter.

Pictures of flowers and fruits. A virgin among roses. Bouquet of wild flowers. Fruits and flowers. Flowers hidden under a cabbage. Camelina in a vase. Flowers and fruits. One of these pictures is represented in the Plate 174.

[The works of this exhibitor have had a happy influence on the designs of the silk manufacturers of Lyons, and his pictures are exhibited as models.]

997 SAVARESE, HENRI, 30 *Avenue St. Charles, Grenelle (Seine)*—Manufacturer.

Improved treble strings and musical instruments. Specimen of an article proposed for the manufacture of artificial orange flowers.

998 SAVARESE, —, jun., *Grenelle, near Paris (Seine)*—Manufacturer.

Harmonic-strings in silk and catgut, with flowers of the same materials trimmed in lace, for harps, violins, violoncellos, and guitars.

999 SCHERTZ, JULES GUSTAVE, 27 *Rue de la Huchette, Paris*—Cabinet-maker.

Apparatus and stands for daguerreotyping. Stands for astronomical telescopes.

1000 SCHLUMBERGER, GASPARD, & Co., *Mulhouse (Haut-Rhin)*—Manufacturers.

Woolen and silk stuffs for furniture, woven by Jacquard machines.

1001 SCHNEIDER & LEGRAND, *Sédon (Ardennes)*—Inventors.

A shearing-machine (longitudinal) for cutting the nap of woollen fabrics.

1002 SCHNEIDER BROTHERS, 137 *Rue Montmartre, Paris*—Merchants.

Silk ribbons manufactured by various houses at St. Etienne (Loire).

1003 SCHWARTZ & HUGUENIN, *Mulhouse (Haut-Rhin)*—Manufacturers. Dépôt, F. & C. MÜLLER, 3 *Rue de Soutier, Paris*. (Agent in London, Mr. SAUPHAR, 9 *Southampton Street, Holborn*.)

Specimens of printed furniture in cotton and wool.

1004 SCHWARTZ, TRAPP, & Co., *Mulhouse (Haut-Rhin)*—Wool-spinners.

Machine-combed woollen threads.

1005 SCRIVE BROTHERS, *Lille (Nord)*—Manufacturers.

Specimens of plates and card-straps for carding cotton, wool, and flax.

1006 SCRIVE BROTHERS & DANSE, J., *Marguette and Halhein, near Lille (Nord)*—Manufacturers.

Linen fabrics. Various kinds of cloth. Ticks woven by power-looms.

1007 SCRIVE BROTHERS, *Lille (Nord)*—Flax-spinners.

Flax and flax-tow thread, manufactured by new mechanical processes.

1008 SEGUIN, JOSEPH, *Puy (Haut-Loire)*; and 40 *Rue des Jeuneurs, Paris*—Manufacturer.

Specimens of silk lace, or novelties in silk made with bobbins.

1009 SEIB, J. A., *Strasbourg (Bas-Rhin)*—Manufacturer.

Glazed cloths for floors. Embroidered articles, cloaks, &c., of various qualities.

1010 SENGENWALD, —, *Strasbourg (Bas-Rhin)*—Producer.

Samples of madder from Alsatia.

1011 SENTIS, SON, & Co., *Rheims (Marne)*—Wool-spinners.

Samples of woollen yarn, fossots, taps, &c.

1012 SERVAIS, JN. BTE., 15 *Rue St. Louis en l'Île, Paris*—Manufacturer.

Specimens of gilt frames. Rustic ornaments of sculpture.

1013 SIGNOBT-ROCHAS, PAUL, *Rue du Chemin Neuf, Vienne (Isère)*—Manufacturer.

Woollen cloths of a new description; black cloths; grey twills, &c.

1014 SIMON, EMILE, *Strasbourg (Haut-Rhin)*—Manufacturer.

Black and coloured prints (washed). Lithographic aquarelle.

1015 SIMON, PAUL, 36 *Boulevard du Temple, Paris*—Producer.

A group: specimen of plastic art.

1016 SIMON, J., 4 *Rue Vide Gousset, Place des Victoires, Paris*—Manufacturer.

Specimens of marble clocks, goblets, inkstands, chimney-pieces, &c.

1017 SIROT, —, *Valenciennes (Nord)*—Nail-maker.

Samples of nails and pegs for shoes in copper and steel.

1018 VIEILLE MONTAGNE JOINT STOCK COMPANY—Mr. A. GUYNEMER, sen., Director, 19 *Rue Richer, Paris*.

Sheets of zinc, of various thicknesses and dimensions. Perforated sheets. Mouldings of various designs and forms. Specimens of zinc roofing, plane, Italian and corrugated: specimens of tubes, gutters, and pipes, balconies, glass frames, and zinc bath with polished border; zinc boxes and barrels for preserving gunpowder; zinc cylinders for spinning machinery; sugar moulds and jars; nails; statues; church ornaments and vases.

Colossal statue of Queen Victoria on her throne, in all the attributes of royalty, 18 feet high; sculptures by Dantan, sen., cast in zinc by Paillard of Paris.

1019 LINEN JOINT-STOCK COMPANY—MM. BEUZET, RADIQUET, HOMON, GOUVY, & LEROUX, Managers, *Landerneau (Finistère)*—Manufacturer.

Specimens of sail-cloth for the navy and merchant service, and yarn dry-spun.

1020 SOREL, —, *Grenelle (Seine)*. Dépôt, 6 *Rue de Lancry, Paris*—Manufacturer.

Various specimens of white of zinc dessicative. A picture painted partly with white of zinc, and partly with white lead or ceruse. Patented in England.

1021 STAMIN & Co., *Thann (Haut-Rhin)*—Manufacturers.

A mule for cotton spinning, with 120 spindles, with double presser flies.

1022 SUSER, HENRI, *Nantes, and La Morinière (Loire-Inférieure)*—Tanner and Boot-maker.

Tanned leather. Curried leather. Boots and shoes.

- 1023 **SUSSE BROTHERS**, 31 *Place de la Bourse, Paris*—Manufacturers.
Candelabras. Statues in bronze and marble. Various clocks and bronzes. Statuettes. Fancy articles.
- 1024 **TABORIN, PIERRE FRANÇOIS**, 62 *Rue Amelot, Paris*—Manufacturer.
Various kinds of files.
- 1025 **TAILBOUIS, VERDIER, & Co.**, 17 *Rue des Mauvaises Paroles, Paris*—Manufacturers.
New kind of gloves, in silk, wool, and thread. Fancy articles in woollen and silk.
- 1026 **TAILFER & Co.**, *Needle Mills, Laigle (Orne)*—Manufacturers. (Agent, C. LANDOUR, 2 *Crown Place, Westbourne Terrace, Hyde Park.*)
Specimens of patent pins, needles, and fasteners, galvanized by Roseleur and Boucher's newly-invented electro-chemical process.
- 1027 **TALABOT, LEON, & Co.**, *Toulouse (Haute-Garonne), and Sant-du-Tarn, near Albi (Tarn)*—Manufacturers.
Various kinds of scythes, cleavers, and files.
- 1028 **TALBOT BROTHERS**, *Menneton Salon, near Bourges (Cher)*—Manufacturers.
Model of a plough with fore carriage and iron shafts, shifting coulter, pressure-screw and a moveable slide to regulate the breadth of the furrows.
- 1029 **TAUTENSTEIN & CORDEL**, 90 *Rue de la Harpe, Paris*—Printers.
Specimens of music, printed in types, and of lithographed printed volumes.
- 1030 **TEILLARD, C. M.**, 25 & 27 *Rue Nationale, Lyons (Rhône)*—Manufacturer.
Specimens of silk, mohair, velvet, taffeta, and other stuffs.
- 1031 **TEISSIER DU CROS, L. & E.**, *Vallerangue (Gard)*
Silk-throwsters.
Various samples of raw and thrown silk.
[This establishment claims the first application in France of steam-power to the production of thrown silk. Several of the specimens exhibited illustrate a new method of winding silk from as many as twenty, thirty, and forty-eight cocoons. Great difficulties are generally experienced in winding silk off more than twelve. In this instance, however, it has been rendered possible, by a simple apparatus invented by the exhibitors, to wind off from as many as sixty cocoons at once. The specimens exhibited are adapted to different purposes, some for the manufactures of blondes, laces, tulle, &c.; others for ribbons; others for satins. The silk mill is a large one, and gives employment to about three hundred operatives.]
- 1032 **TERRIER, JOS., & Co.**, *Suresnes (Seine)*—Dyers and Finishers.
Specimens of various woollen stuffs; satin; damask merino muslin de laine, dyed and finished.
- 1033 **TEXIER, THEOPHILE, jun.**, *Niort (Deux Sèvres)*
—Glover.
Specimens of gloves of deer, chamois, castor, and sheep skins.
- 1034 **TEXIER, VICTOR**, 350 *Rue St. Honoré, Paris*—Publisher.
Specimen of books, bound and stitched. Museum of ancient and modern sculpture.
- 1035 **THEIL, JOSEPH**, *St. Lucien, near Epernon (Eure and Loire)*—Manufacturer.
Millstones, especially for grinding all dry grains, such as those from America.
- 1036 **THEVENOT, ETIENNE**, *Clermont-Ferrand (Puy de Dôme)*—Producer.
Patterns of painted glass for windows, style of the 15th century. Two painted glass windows, executed after the cartoons of the exhibitors, by his pupils: forming part of a very large window, 23 feet high and 15 wide, which was made in 1848, for a church in Calcutta.
- 1037 **THIBERT & ADAM**, *Metz (Moselle)*. Dépôt, 10 *Rue du Grand Chantier, Paris*—Manufacturers and Dyers.
Specimens of silk plush used in the manufacture of hats.
- 1038 **THIERRY, JEAN**, *Rue Bat d'Argent, Hotel des Négociants, Lyons (Rhône)*—Manufacturer.
A frame, containing nine heliographic pictures.
- 1040 **THOMAS BROTHERS**, *Avignon (Vaucluse)*. Dépôt, *Lyons (Rhône)*—Manufacturers.
Specimens of florences from Avignon, various shades.
- 1041 **THOREL, HENRI**, *Ruffec (Charente), Hotel des Postes*—Manufacturer.
Specimens of truffled ducks' livers; and of truffled red partridges.
- 1042 **TIFFEREAV, THEODORE**, 10 *Rue de Faugirard, Paris*—Watchmaker.
Hydraulic clock, patented in France and England. This time-piece marks the hours and minutes on an ordinary dial, and its perfect regularity is insured by a floating pendulum. Two quarts of water suffice to keep the clock going for thirty hours, and the only caution necessary, is to pour the water from the lower vessel into the upper one at the exact moment, without leaving time for the clock to stop; by keeping up a constant flow of water, the clock will never require winding up.
- 1043 **TOULZA, F.**, *St. Etienne (Loire)*—Manufacturer.
Specimens of wrought iron. Hardware.
Shoemakers' tools, and small cleavers, &c.
- 1044 **TRAVERS, PIERRE LOUIS**, 146 *Faubourg Poissonnière, Paris*—Producer.
A model of the upper part of the Custom-house. A model of the moveable cupola of the observatory. Various models of hothouses.
- 1045 **TRUCHY, E.**, 18 *Rue du Petit Lion, St. Sauveur, Paris*—Jeweller.
Artificial pearls, equal in appearance to real pearls. Imitation pearls for ladies' head dresses and ball robes.
[Imitation pearls are usually made of thin glass spheroids, covered on the inside with the scales of a small fresh-water fish, which are first washed in ammoniacal water, in which they are retained long enough to become soft, flexible, and adhesive. The glass must be bluish, opalescent, and very thin, containing but little potash and oxide of lead, and the manufacture involves much delicacy of manipulation.—D. T. A.]
- 1046 **TURPIN, FRANCE ANTOINE**, 28 *Rue Richelieu, Paris*—Manufacturer.
Chocolate, in lozenges and various other forms.
- 1047 **VIEL, —**, Chemist, *Tours (Indre and Loire)*—Inventor.
Rotatory pill-making machine.



JARI 6.

205.

A BRONZED IRON FOUNTAIN. CAST BY M. ANDRE, OF VAL D'ORNE. FRANCE.

- 1048 WARMONT, V. E., *Neuilly sur Seine*—Dyer.
Warp prepared for weaving. Woollen scarfs. Woollen yarn.
- 1049 CHAMBER OF COMMERCE OF AVIGNON, *Vaucluse*—Producer.
Three samples of madder roots, yellow, red, and deep red: six flasks of madder powder; and two flasks of extract of madder.
- 1050 ALCAN, MICHEL, 38 *Rue d'Enghien, Paris*; *Silk Spinning Mill (Nimes)*.
Raw silks produced from French and Calcutta silk-pods, and reared in the cold. An assortment of plates made by a new method of cutting. Patented in England.
- 1051 ALLUAUD, —, sen., *Limoges (Haute-Vienne)*—Manufacturer.
Various specimens of china for the table and the toilet.
- 1052 AUCOC, —, 6 *Rue de la Paix, Paris*—Manufacturer.
Ladies' and gentlemen's dressing-cases. Large toilet service in embossed silver. Dressing-case, composed of more than eighty pieces, in silver, gilt, chased and engraved; the case of ebony inlaid with flowers in marquetry. Dressing-case, ornamented with the arms of England.
- 1053 ANDRÉ, J. P. VICTOR, *Val d'Osme (Haute-Marne)*, and 14 *Rue Neuve, Ménilmontant, Paris*—Manufacturer.
Cast-iron bedsteads; grates for chimneys; groups of animals; candelabra; statues and vases.
A bronzed iron fountain with figures of tritons, &c. This fountain is represented in the annexed Plate 205.
- 1054 ANDRÉ, JEAN, & COUNT DE BRONNO BRONSKI, *Château de St. Selve, Arrondissement de Bordeaux, Gironde*—Producers.
Two ploughs, on the system of André Jean; with one or two coulters, one sowing machine, and one harrow.
- 1055 AUBANEL, —, 43 *Rue de Trévis, Paris*—Manufacturer.
Bronze and marble chimney-piece.
Gilt and carved folding iron door, with moulding, pediment, carved wood panels, and painted porcelain centres, 21 feet 4 inches high by 8 feet 2 inches wide. Designed and executed by the exhibitor.
- 1058 AUBEUX, —, 6 *Rue et Impasse de l'Orillon, Paris*—Manufacturer.
Kerseymeres stuffs for waistcoats, a fashionable novelty.
- 1059 AUCLERC & LEDOUX, *au Fidèle Berger, Rue des Lombards, Paris*—Manufacturers.
Confectionery, and articles for the use of confectioners.
- 1061 BACH, —, sen., 99 *Faubourg St. Denis, Paris*—Manufacturer.
Specimens of transparent painted blinds.
- 1062 BACOT, PAUL, & SON, *Sedan (Ardennes)*—Manufacturers.
Specimens of satin cloths and kerseymeres, of various colours and qualities.
- 1063 BADIN, JACQUES CHAS. FREDERIC, 337 *Rue St. Denis, Paris*—Manufacturer.
Basket-work, and hats of diamond-like feather fabrics.
- 1064 BALAY, JULES, *St. Etienne*—Manufacturer.
Specimens of silk ribbons of different qualities, plain and figured.
- 1065 BALLEIDIER, FÉLIX, 20 *Rue des Capucins, Lyons (Rhône)*—Manufacturer.
Figured velvets, with and without embroidery. Velvet waistcoats.
- 1066 BALNY, JEAN PE., jun., 41 *Rue de Charenton, Paris*—Manufacturer.
Centre seat for a drawing-room, which can easily be altered into various forms to suit different occasions. It will form a large sofa for eight persons; it can also be changed to a sofa of the ordinary size, and two arm-chairs, or two sofas *vis-à-vis*. The statue which ornaments it is from the manufactory of M. Paillard, and being moveable, may be replaced by a bronze or porcelain vase for flowers, or by a candelabrum.
An arm-chair in rose-wood, covered with moquette carpet. This piece of furniture may speedily be taken to pieces.
An arm-chair in black wood, in imitation of ebony, ornamented with gilt bronze, and covered with Lyons damask. A fancy chair for the drawing-room or boudoir, ornamented in gold and white, and covered with silk. Fancy chair in walnut-tree, covered with silk.
- 1067 BARBAT, —, *Châlons-sur-Marne*—Lithographer.
Illustrated volumes of Scripture.
- 1068 BARBÉ, C., *Mulhouse (Haut-Rhin)*—Designer.
Designs for stuff-printing.
- 1069 BATON, W.M., & SON, 11 *Rue Noire, Lyons (Rhône)*—Manufacturers.
Specimens of felt and silk hats.
- 1070 BATTENBERG, GUILLAUME, 20 *Rue du Dragon, Paris*—Printer.
Specimen of printing; one volume bound.
- 1071 BAUDRY, ALEX. THE., *Athis, Mons (Seine and Oise)*—Manufacturer.
Specimens of steel for springs and other purposes.
- 1072 BAUERKELLER & CO. (BERGER, WALTER, successor), 7 *Rue d'Enghien, Paris*—Publishers.
Specimens of geographical maps. Plans of towns in relief; sacred paintings; and sky-lights.
- 1073 BAZIN, A., *Mesnil, St. Firmin (Oise)*—Agriculturist.
Samples of wheat in the ear and in seed.
- 1074 BRAUFILS, —, *Place des Quinconces, Bordeaux*—Manufacturer.
Writing-table, work-table, cupboard, sofa, causeuse or small sofa, arm-chairs, and chairs, in the style of Louis XV.
- 1075 BERNARD, A., 16 *Avenue de la Mothe-Piquet, Paris*—Manufacturer.
Specimens of hunting guns.
- 1076 BEAUVAIS, CAMILLE, 18 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.
Specimens of raw silk.
- 1077 BELLANGÉ, ALEXANDRE LOUIS, 77 *Rue de Marais, St. Martin, Paris*.
Specimen of cabinet work. Round articles of furniture. Flower-stands. Consoles and round desk, style Louis XIV.
- 1078 BELLEVILLE BROTHERS, *Nancy (Meurthe)*—Manufacturers.
Specimen of starch.
- 1079 BELLON, JOS., & CO., 2 *Rue du Griffon, Lyons (Rhône)*—Manufacturers.
Specimens of figured silks: Lustrine, taffeta, English velvet, vénétienne, satin, &c.

- 1080 NATIONAL SHEEP FOLD OF RAMBOUILLET (*Seine and Oise*)—Producer.
Specimens of real merino.
- 1081 BERNARD, JN. BTE., *Valenciennes (Nord)*—Manufacturer.
Specimens of veneered panel and inlaid flooring. Cases for printing-offices on a new principle.
- 1082 BERTECHE, CHESNOS, & CO., *Sélan (Ardennes)*, and 29 *Rue des Fossés, St. Germain l'Auxerrois, Paris*—Manufacturers. (Agents, VACOSSIN, BONNET, & FOURNIER, 5 *Wood Street*.)
Specimens of cloths of different shades, kerseymeres, satins, and fancy articles of every description.
- 1083 BARROTIN & LEGOFF—Manufacturers.
Capstans and iron rope manœuvring apparatus for vessels.
- 1084 BERTON, H., 13 *Rue Faubourg St. Martin, Paris*—Manufacturer.
Pasteboard boxes. Perfumed cases and satchels. Envelopes of letters.
- 1085 BERTRAND, GAYET, & DUMONTAT, 27 *Place de la Comédie, Lyons (Rhône)*—Manufacturers.
Specimens of figured silks; shawls, neckerchiefs, scarfs.
- 1086 DE BETTIGNIES, MAXIMIN, *St. Amand les Eaux (Nord)*—Manufacturer.
Porcelain vases (soft biscuit), ornamented and mounted in bronze. Flower-stands and other articles, in soft and ornamented porcelain.
- 1087 BIANCHI, J., & DUSEIGNEUR, *Lyons (Rhône)*—Manufacturers.
Various samples of raw and wrought silks.
- 1088 BISSON, ISIDORE, jun., *Bernay (Eure)*—Manufacturer.
Specimens of cloth for frocks, bronzed wadding, blue pilot-cloth, &c.
- 1089 BLAIZE, H., 3 *Rue Tournaine, St. Germain, Paris*—Engraver.
Specimens of embossed engraving on brass.
- 1090 BLANCHET & KLÉBER, *Rives (Isère)*—Manufacturers.
Specimens of white and coloured paper, sized and un-sized.
- 1091 BLEUZE, HADENCOURT, 33 *Rue des Lombards, Paris*—Perfumer.
Fruit-soap: oranges, lemons, and citrons, having the perfume of the fruit they resemble, enveloped in a transparent, invisible pellicle, impermeable to air and wet, and adapted for exportation. The envelope quickly disappears on rubbing the soap in water.
Flower-soap: soap made into artificial flowers. A basket representing soap on a stalk.
Sweet and bitter almonds in small velvet boxes, formed like the shell of the green almond, and having the smell of the real fruit.
Pomegranate jelly; pistachios-nuts, almond, and ananas creams; new perfumes for ladies.
- 1092 BOBÉE & LEMIRE, *Choisy-le-Roi (Seine)*—Manufacturers.
Chemical products: Acids, acetates, bi-carbonate of soda, chloroform, emetics, turpentine, ether, oils for lamps, nitrate of lead, caustic potash, pyrolignite of iron and lead, sulphate of copper, verdegriis Schweinfurt.
- 1093 BOLLEE, ERNEST, *St. Croix-ès-le-Mans (Sarthe)*—Bell-founder.
Model of three bells, forming a perfect chime, for a two-storied belfry. The larger one is suspended by a new method of suspension, called "à la développante," showing, on a scale of one to five inches, the new method of suspension adopted by the exhibitor for the large bell of the cathedral in Paris.
- 1094 BONFILS, MICHEL, SOUVRAZ, & CO., 3 *Rue des Fossés Montmartre, Paris*—Manufacturers.
Cashmere square shawls and scarfs.
- 1095 BONNET, JEAN BAPTISTE, *Roussel*—Inventor.
A plough with double subsoil action.
- 1096 BONNET, —, jun., 5 *Chemin de Ronde de la Barrière Ménilmontant*—Manufacturer.
Fire-proof earthenware. Chemical apparatus, and crucibles for castings.
- 1097 BONNET & CO., 2 *Rue du Griffon, Lyons (Rhône)*—Manufacturers.
Specimens of plain silks: taffeta and satin.
- 1098 BOQUET, Mlle. MARIE VIRGINIE, 27 *Rue du Tronchet, Paris*—Painter on Porcelain.
A portrait of Louis Philippe, painted on enamel.
- 1099 BORD, A., 35 *Boulevard Bonne Nouvelle, Paris*—Manufacturer.
Grand pianoforte.
- 1100 BORSARY, —, *Dijon (Côte d'Or)*—Manufacturer.
Specimens of surgical apparatus. Instruments for various uses, and bandages.
- 1101 BOTTIER, LOUIS NICOLAS, 36 *Rue St. Jean de Beauvais, Paris*—Engineer.
Machines for gold-beating. Beaten gold, as specimens of their application.
- 1102 BOUASSE, LEBEL, & CO., *Rue du Petit Bourbon, Paris*—Producers.
Samples of gelatine pictures.
- 1103 BOUCHARD, FLORIN, *Tourcoing (Nord)*—Manufacturer.
Specimens of satin, woollen, and cotton fabrics, &c.
- 1104 BOUCHERIE, J. A., 4 *Rue Mondovi, Paris*—Inventor.
Various kinds of wood, saturated by a chemical process, which tends to their preservation. Woods dyed by the same process; apparatus for performing the operation.
- 1105 BOUDON, LOUIS, *St. Jean du Gard (Aisne)*—Manufacturer.
Specimens of white and yellow silk for bolting cloths: weft and satin organzin, gauze, and articles manufactured at St. Quentin (Aisne).
- 1106 BOUHARDET, CLAUDE PHILIBERT MICHAEL, 70 *Rue de Bondy, Paris*—Manufacturer.
Carved billiard-table, in the style of Louis XIV., imitation of buhl, exhibited for the beauty of its Indian tortoiseshell, with six cameos of Sèvres porcelain. The painting represents "Cupids Playing." The mosaic is of a severe style, framed in ebony mouldings, and ornamented with chased copper.
Mahogany billiard-table, combined and arranged to prevent the effects of atmospheric changes; in the style called "renaissance," sculptured or carved in walnut-tree wood, imitation of ebony, representing several historical personages of that era.

1107 BOUILLETTE, HYVELIN, & Co., 46 Rue St. Avoys,
Paris—Jewellers.

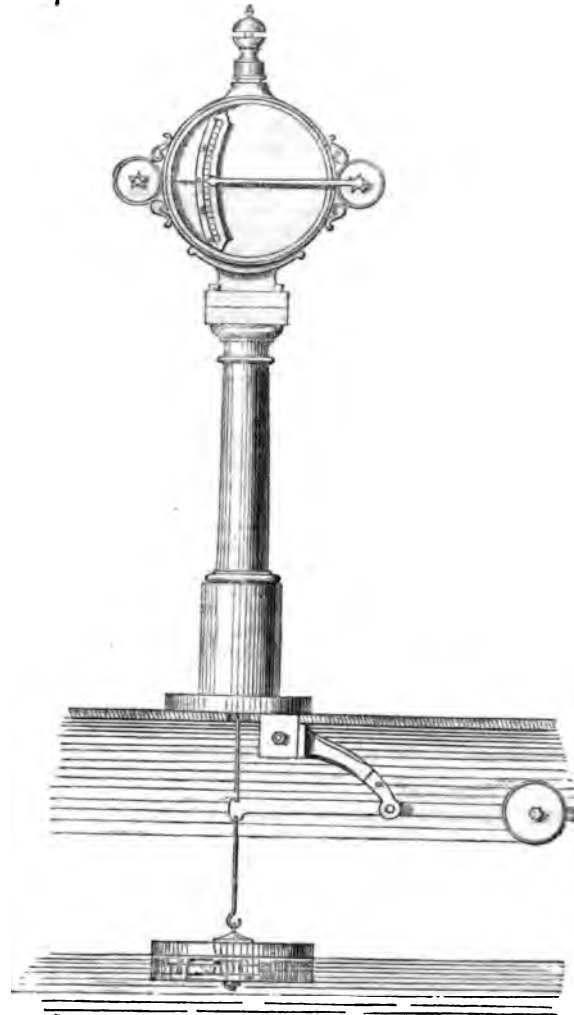
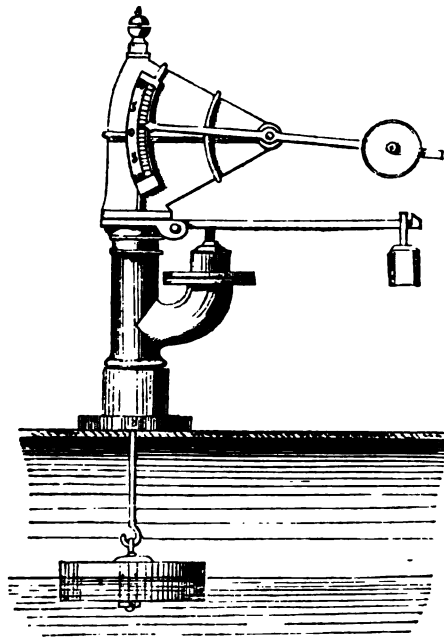
Frontlet, composed of seven brooches, stomachers, bracelets, brooches, and other articles of gold and silver jewellery, set with stones.

1108 BOURDON, EUGENE, 74 Faubourg du Temple,
Paris—Machine-builder.

Acting model of a steam-engine; various instruments for measuring the pressure of steam and gases, the atmospheric pressure, the temperatures, &c.; new metallic steam-gauges to show the pressure of steam in the boilers

of fixed engines, locomotives, and steam-boats, high and low pressure, adopted by the principal railway companies in France; air-pressure gauges, for blowing engines in high furnaces; Watt's steam indicator to register the variation of pressure in steam-engines; gas regulating apparatus; new portable metallic barometer; model of steam-engine to show how the carved metallic tubes may be employed to supply the place of cylinders and pistons; new water level, with self-acting steam-whistle, without stuffing-box.

Some of these indicators are represented in the annexed illustrations.



Bourdon's Indicators for Steam Boilers.

1109 FORTIN, BOUTELLIER, 24 Rue du Moulin, à l'Huile,
Beauvais (Oise)—Manufacturer. (Agent, J. S.
DE GAETAN, 3 Bow Lane, Cheapside.)

Specimens of manufactured, spun and prepared woollen cloth.

1110 BOUVARD & LANGON, Lyons (Rhône)—
Manufacturers.

Specimens of figured silks; satin, damask, lustrine, brocatelle, &c.

1111 BRANDUS & Co., 87 Rue Richelieu, and 40 Rue
Vivienne, Paris—Publishers.

Specimens of printed music.

1112 BRETEAU, CHARLES AUGUSTE, 34 Rue Notre
Dame des Victoires, Paris—Manufacturer.

Artificial flowers, and plumes of feathers for dresses and head-dresses.

Trimmings for dresses, &c.

1113 BRETON BROTHERS, 23 Rue Dauphine, Paris—
Inventors and Manufacturers.

Air-pump, with rotatory motion; electro-medical apparatus; electric locomotive.

1114 BENOIT, MALO, & VALBAUM, Rheims—
Manufacturers.

Specimens of merinos.

- 1115 BRIDARD, J., 53 *Rue Vivienne, Paris*—Boot-maker.
Japanned riding boots; hunting boots; and various kinds of shoes and boots.
- 1116 BRIQUET & PERRIER, 22 *Rue Jean Robert, Paris*—Manufacturers.
Caoutchouc webbing for braces, garters, &c.
- 1117 BRISSON BROTHERS, 13 *Rue du Griffon, Lyons (Rhône)*—Manufacturers.
Specimens of silk and cotton plushes.
- 1118 BROUSSE & CO., 1 *Rue Lorette, Lyons (Rhône)*—Manufacturers.
Specimens of plain silk velvets, of different colours.
- 1119 BRUNEAU, L. A., 40 *Rue de Montmorency, Paris*—Silversmith.
An assortment of articles in silver, gold, and fancy jewellery, including:—
Silver, gold, and silver-gilt pencil-cases. Desk seals, with ivory, stone, and silver handles. Seals, watch-keys, thimbles, scissors, needle-cases, bodkins, crochet-needles for embroidery. Ladies' companions in ivory, ebony, and other woods, with gold, silver, and silver-gilt fittings. Snuff-boxes in niello and damascene, and silver-gilt fancy patterns. Silver and silver-gilt bonbon-boxes. Daggers in artistic silver. Sets of writing implements, with stone, ivory, tortoiseshell, and silver-gilt mountings. Paper-knives, and pen-holders. Smelling-bottles, mounted in gold, silver, and silver-gilt. Card-cases, souvenirs, ladies' tablets, and ball tablets. Cigar-cases, match-boxes, cigar-holders. Double eye-glasses of various patterns. Port-monnaies and purses for gold. Silver table plate, including dessert covers, tea-spoons, sugar-tongs, tea-strainers, shells for tea-caddies. Spoons for sugar, olives, preserves, punch, and eggs. Pestle-poons for melting sugar in water, ice and salt-spoons. Salad forks and spoons, fish-knives, ice-trowels, egg-cups, and napkin-rings, breakfast-cups, miniature breakfast services. Silver-gilt goblets, and crystal goblets set in silver-gilt. Carving knives and forks. Table and dessert knives, with silver, silver-gilt, and ivory handles. Picnic boxes with folding fittings. Tea-cases, with complete service, &c.
- 1120 BRUNET, LECOMTE, GUICHARD, & CO., *Lyons (Rhône)*—Manufacturers.
Specimens of silk prints: taffetas, satined muslins, damasked gauze, crape for shawls, scarfs and neckerchiefs.
- 1122 BUFFAULT & TRUCHON, *Essonne (Seine and Oise)*—Manufacturers.
Wool and cotton blankets.
- 1123 BUGRE, AUGUSTE, *Rue Neuve, St. Laurent, Paris*—Manufacturer.
Canes in tortoiseshell and ram's horn.
- 1124 BUIGNIER, GABRIEL S. F., 20 *Rue des Vertus, Paris*—Producer.
Specimens of artistic bronzes; matrices engraved on steel; battle of Brenneville; religious subjects; groups of animals and children, &c.; by a new process for applying cast iron to steel engravings.
- 1125 BUISSON, —, sen., & CO., *St. Etienne (Loire)*—Manufacturers.
Specimens of fancy gauze and rich silk ribbons.
- 1126 CABANES & RAMBIÉ, *Bordeaux (Gironde)*, and 53 *Quai de Paludate*.
Grills flowers; specimens of wheat from the market of Bordeaux. Specimens of wheat of Egyptian origin. Flour of Egyptian origin. Samples of ground seeds, obtained by a newly-invented accelerator, by which damp and greasy grains may be ground.
- 1129 CAIN, A., 103 *Faubourg St Denis*—Sculptor.
Specimens of bronzes: Nest with a group of birds fighting. Pair of goblets. Group of birds. Nest with birds. Two ink-stands. Two herons, &c.
- 1130 CANNEAUX, L. M., & SONS, *Rheims (Marne)*, and 14 *John Street, Crutched Friars, London*—Wine Merchants.
New apparatus for working and liquifying champagne wines.
- 1131 CAVELAN & CO., *Bagnères de Luchon (Haute-Pyrénées)*—Manufacturers.
Chemical products:—ore of argentiferous lead. Ore of oxide of manganese. Red and yellow litharge.
- 1132 CABLE, A. T., *St. Maur les Fossés (Seine)*—Manufacturer.
Specimens of brass foundry; objects of art; candle-sticks; clocks; flower-stands, &c.
- 1133 CARON, ALPHONSE, *Passage de l'Opéra, Paris*—Manufacturer.
Parisian gun; four plain guns; carbine; pair of tier pistols; pair of pistols in the Eastern style; drawing-room pistols.
- 1134 CARQUILLAT, M., CANDY, & CO., *Croix Rousse, Lyons (Rhône)*—Manufacturers.
Picture woven in silk, with portraits.
- 1135 CARRIER, ROUGE, *Rue de Puits d'Ainay Lyons (Rhône)*—Manufacturer.
Specimens of candelabras; chandeliers; and bronze censers.
- 1136 CARRIERE, F., *St. André de Valborgne (Gard)*—Silk-throwster.
Skins of raw silk, white and yellow.
- 1137 CAUSSE & GARION, *Lyons (Rhône)*—Silk-spinners.
Specimens of raw and wrought silks.
- 1138 CAUVET, J., *Chantilly (Oise)*—Manufacturer.
Specimens of manufactured produce: wool combed and carded, and yarn.
- 1139 CHAGOT, —, sen., 73 *Rue Richelieu, Paris*—Manufacturer.
Specimens of feathers and bouquets of feathers; artificial flowers. Fine flower ornaments and head-dresses. Vases for the same.
- 1140 CHAMBELLAN & CO., 8 *Rue des Fossés Montmartre, Paris*—Manufacturers.
Square shawls and scarfs in wool and cashmere.
- 1141 CHAMBER OF COMMERCE OF LYONS (*Rhône*)—Producer.
Pictures woven in silk: 1. Silk stuff woven on the Jacquard frame, representing the will of Louis XVI., and executed by M. Maisiat. 2. The arms of the city of Lyons, in colours, executed by MM. Matheron and Bouvard. 3. The portrait of Jacquard, by M. Dider Petit. 4. Scriptural subject.
- 1142 CHAMOUILLET, —, 22 *Rue de Cléry, Paris*—Manufacturer.
Oval glass and etched mirror glass, with carved wood frames.
- 1143 CHAMPAGNE & ROUGIER, *Lyons (Rhône)*—Manufacturers.
Specimens of figured silks; parasols and models of dresses, flounced.

- 1144 CHARAGAT, EMILE, 268 *Rue St Denis, Cour des Bleus, Paris*—Manufacturer.
Umbrellas, parasols, of new and improved forms and construction, with handles of different materials. Marques.
- 1145 CHARRIÈRE, —, *Rue de l'École de Médecine, Paris*—Manufacturer.
Specimens of surgical apparatus, and instruments of every kind, cutlery, &c.
- 1146 CHEBREAUX, JULES, 3 *Rue St. Pierre, Paris*—Designer.
Designs for all descriptions of printed and woven fabrics, fancy work, cachemere dresses, paper-hangings, furniture, stuffs, silks, &c. Designs for Abusson carpets.
- 1147 CARRIOL, BARON, *Angers (Maine and Loire)*—Manufacturer.
Specimen of combed wool.
- 1148 CHOQUEL, FELIX, *St. Denis*—Manufacturer.
Scarfs in satinete barege; with grounds of various colours and cachemere designs. Shawls.
- 1149 CHOQUART, C., 259 *Rue St. Honoré, Paris*—Manufacturer.
Specimens of chocolate of different qualities.
- 1150 CHOSSON & Co., 63 *Rue Montmartre, Paris*—Glovers.
Ladies' and gentlemen's kid gloves.
- 1151 CLAIRE, PIERRE, 93 *Rue du Cherche-Midi, Paris*—Inventor and Manufacturer.
Model of a locomotive engine; Clair's indicator. La-pointe's calculating machine.
- 1152 CLÉMENTON, Madame, 8 *Rue du Port-Maxon, Paris*, and *Mount Street, Grosvenor Square, London*—Corset-maker.
Corsets in bleached silk, for delicate constitutions. Corsets for riding.
- 1153 COIGNET & SON, *La Guillotière, near Lyons (Rhône)*—Manufacturers.
Chemical products: Glue, gelatine, phosphorus, prussiate of potassium, &c.
- 1154 COLLIARD & COMTE, *St. Etienne (Loire)*—Manufacturers.
Specimens of silk ribbons.
- 1155 COLLOT BROTHERS, 41 *Rue de l'École de Médecine, Paris*—Manufacturers.
Chemical balance, capable of weighing upwards of 3 lbs. The sensibility is one thousandth part of the weight. It is mounted on an enamelled cast-iron pedestal, and furnished with weights. Exhibited for novelty, accuracy, and simplicity of construction, and its capability of resisting the action of acids.
Chemical balance, capable of weighing 3½ ounces, with a sensibility of a hundred and thirtieth part of a grain, or the twenty-thousandth part of the weight; similarly mounted.
Assay balance, mounted on a gilt column, capable of weighing a pennyweight, and sensible to the ten-thousandth part of the weight.
- 1156 CONRAD, WILHELM, 26 *Rue Vieille du Temple, Paris*—Manufacturer.
Refined camphor blocks. Specimens of sublimated iodine and of ioduret of potass.
- 1157 COBBERANT, ADOLPHE, *Rue de Paradis, Paris (Marais)*—Manufacturer.
Porcelain door-knobs and finger-plates. Balustrades, tassels, bell-pulls, tobacco-boxes, tea-caddies, cigar-stands, &c.; china and crystal glass goblets and tumblers, mounted in bronze, and gilt and varnished. New patterns.
- 1158 CLAUDIS, —, 1 *Rue Joquelet, Paris*—Manufacturer.
Guns and pistols of new construction.
- 1159 CORLOSSIER & Co., 5 *Rue de Charonne, Paris*—Manufacturers.
Rosewood bookcase. Drawing-room buffet. Flower-stand of rosewood, with glazed doors, revival style.
- 1160 COUCHONNAT & Co., 79 *Rue de Richelieu, Paris*—Manufacturers.
A collection of embroidered dresses and shawls in silk. Moire antique, in white and black satin, in taffetta, tulle, merino, &c. The embroidery is in coloured silks, gold thread, &c.
- 1161 COUCHOUD, —, 11 *Place St. Charles, St. Etienne (Loire)*—Manufacturer.
Specimens of satin, velvet, and silk ribbons.
- 1162 COUPIN, JÉRÔME, *Aix (Bouches du Rhône)*—Manufacturer.
Felt hats of various colours, without dressing.
- 1163 COURTOIS, ANTOINE, 21 *Rue du Caire, Paris*—Musical Instrument-maker.
Trumpets, clarions, trombones, horns, ophicleids, and various other brass instruments, with pistons and cylinders on a new system.
- 1164 COURTE, PAUL, 47 *Grand Rue, Lyons (Rhône)*—Dyer.
Specimens of silks dyed black for plush.
- 1167 DAMISON & Co., 6 *Rue des Capucins, Lyons (Rhône)*—Shawl Manufacturers.
Long shawls of wool, and of wool and cachemire.
- 1168 DANIEL, —, jun., 33 *Rue Michel-le-Comte, Paris*—Jeweller.
Steel mountings for purses; articles in steel used for jewellery.
- 1169 DARVIEU, VALMAUD, & Co., *Laroque, near Ganges (Hérault)*—Silk-spinners.
Specimens of white and yellow silks.
- 1170 DAUDRE, A., *St. Quentin (Aisne)*; and 17 *Rue Bertin Poirée, Paris*—Manufacturer.
Specimens of linen fabrics, table-cloths, and napkins.
- 1171 DATHUÏLE, AUGUSTE THÉODORE, 84 *Rue Montmartre, Paris*—Bookbinder.
Bindings in gilt and stamped cloth, relievo; box-covers in alto-relievo, gilt, silvered, and coloured. Printed by the exhibitor's new process.
- 1172 DEBAIN, A., 15 *Rue Trévienne, Paris*—Manufacturer. (Agent in London, NOVELLO & Co., 44 *Dean Street, Soho*.)
Piano-mécanique, or antiphonel pianoforte, an instrument which has been applied with success as a substitute for organs and harmoniums; it is said to be superior to the barrels used in church-organs, and less costly.
The flat surface of the upper portion of the antiphonel is covered with a metal plate, pierced across its width with a series of openings, which admit through corresponding number of metal points, project the eighth of an inch above the plate. These the extremities of small levers, which communicate the action; thus the upper level surface of t

forms a complete key-board; the projections are pressed down to perform the music by a small piece of hard wood, studded with pins, which is forced over the level surface already mentioned.

This piece is held down by a bar placed over it, and the pressure regulated by springs. Having placed the piece on the antiphonal, it is passed over the key-frame by turning a handle, and as the pins on the plank come in contact with the antiphonal keys, the notes are struck, which are loud or soft, as may be required.

The pieces studded with pins may be from 4 inches to 24 inches long; 8 inches will contain as much as is usually written on a page of music paper, and any number of pieces may be used for compositions of greater length. While one piece is playing, another should be had in readiness immediately to succeed it, until the piece of music is concluded.

The mode of studding the wood with pins, to produce the various effects required, is very simple, and easily executed.

The antiphonal can be placed on the pianoforte as a cover, and by a simple contrivance, on opening the pianoforte, the antiphonal action is removed, and on touching the keys the tone of the instrument is not affected by the attachment. In closing the pianoforte the antiphonal resumes its place, and is ready for use.

When applied to the organ, &c., as pressure on the keys is only required, the antiphonal is placed over the key-frame, and appears like fingers pressing down the required notes. This instrument is played in the Exhibition building.

1173 DEBBELD-PELLERIN, —, *Nancy (Meurthe)*—
Manufacturer.

Embroidered bed-coverlet; various cards of patterns for handkerchiefs, representing a variety of escutcheons, arms, vignettes, &c.

1174 DEGARDIN, VINCENT AUGUSTIN MARIE, 62 *Rue du Temple, Paris*—Manufacturer.

Specimens of burnishing-stones of all sorts, for the use of gold and silversmiths, such as blood-stones, agates, and flints.

Specimens of steel burnishers, English rouge, putty, leather, and buff-skin for polishing; and various other articles belonging to the trade.

[Burnishing-stones and blood-stones, as used by jewellers, are jaspery varieties of quartz, of flinty nature and velvet-black colour. One use is to try the colour of the precious metals, and for this their extreme fineness of grain, hardness, and colour, are their chief recommendations. The best of them are obtained from Lydia (Asia Minor), whence they are called Lydian-stone: they are found as pebbles.—D. T. A.]

1175 DELARBRE, —, *Lavalette, near Montpellier (Hérault)*—Producer.

Specimens of raw and thrown silk.

1176 DELARBRE, VICTOR, *Gazilhac, near Ganges (Hérault)*—Silk-spinner.

Specimens of raw and thrown silks.

1177 DUVAL, —, *Paris*—Inventor.

A new system of locomotion for railways.

1178 DELEUZE, ALPHONSE, *St. Ambroise, arrd. d'Alais (Gard)*—Producer.

Specimens of raw silk.

1180 DELIGNOU, VICTOR, 163 *Rue Montmartre, Paris*—
Inventor.

Hot-air stoves, japanned tin lamps, &c.

1181 DELISLE & Co., *Briè, near Grenoble (Isère)*—
Manufacturers.

Printed morocco leather for slippers, furniture, medallions, &c.

1182 DENEIROUSSE, E., BOIS GLAVY, & Co., 16 *Rue des Fossés, Montmartre, Paris*—Manufacturers.

French Cashmere shawl.

1183 DENUELLE, AUGUSTE DOMINIQUE, 43 *Rue des Petites Ecuries, Paris*—Producer.

Natural product for the ceramic art, feldspath.

1184 DESAUGES, ACHILLES, 57 *Quai Valmy, Paris*—
Manufacturer.

A carved mantelpiece. Two mangers. Two filters. Models of pavement in short square stones of marble; chimney of Tonnerre stone, executed by Mr. Guersant, staturary.

[The stone used in the manufacture of the chimney-piece here exhibited is remarkable for its smoothness and evenness of texture and its excellent tint of colour. It would appear to be easy and free in working, and the carved work is worthy of notice for its boldness.—D. T. A.]

1185 DESCHAMPS, NICOLAS, 14 *Galerie d'Orléans, Palais National, Paris*—Manufacturer.

Specimens of boots and shoes.

1186 DESFONTAINES, MAISON LEROY, & SON, 13 & 15 *Galerie Montpensier, Palais National, Paris*—
Watchmakers.

Travelling clock, striking the minutes. A clock made of iron and porcelain, movement indicating the quarters. Watches. Chronometers. Musical picture, &c.

1187 DEVIOLAINE BROTHERS, *Vauzrol (Ain)*—
Glassmakers.

Thirty samples of bells and bottles.

1188 DEVRANGE, BERNARD, JUN., 257 *Rue St. Denis, Paris*—Manufacturer.

Pieces of lace-paper, as rims of plates and cards.

1189 DIDA, ALPHONSE, 11 *Boulevard du Temple, Paris*—Manufacturer.

Samples of varnish; alcohol varnish for imitating gold on copper, for metals, wood, leather, and paper; white varnish for water-colours and oil painting, which may be removed with spirits of wine. Samples of water-proof paper and fabrics.

1190 DINANT & HUETTE, 8 *Rue Levesque, Nantes (Seine-Inférieure)*—Producers.

Fresh butter kept without salt. Process patented in England and France.

1191 DOLLFUS, MIEG, & Co., *Mulhouse (Haut-Rhin)*—
Manufacturers. (Depôt, 9 *Rue St. Fiacre, Paris*; and 44 *St. Paul's Churchyard, London*.)

Pieces of wool, muslin, jaconet, clear muslin, &c., spun, woven, and printed by the exhibitors.

1192 DONAT, ANDRÉ, *Place Croix Paquet, Lyons (Rhône)*—Manufacturer.

Waistcoats and dresses, fancy watered silk; grenadine, satin, poplin, &c.

1193 DONAT & Co., *Lyons (Rhône)*—Manufacturers.

Specimens of silk plush for hats. Plain hats.

1194 DOPTER, C. V. M., 58 *Rue de la Harpe, Paris*—
Manufacturer.

Specimens of figured black and coloured lace. Specimens of designs engraved on silk by chromolithography.

DEL & MAUSSIER, 6 Rue National, St. Etienne (Loire)—Manufacturers.
of fancy ribbons.

DEIX & BROSSIER, Labriche, near St. Denis (Seine)—Manufacturers.

products: Extracts of Campeachy, Cuba, ornambuco wood. Salt of roses. Oximuriate stochlorure of tin. Staumate of soda.

DECO-SOLKIL, —, 35 Rue de l'Odéon, Paris—Optician.

Apparatus and instruments of all kinds; solar tor, consisting of a mirror with two glasses, lated glass for reflection, the other of blackened larization. Large photogenic apparatus for n-light, and by the help of a lamp only, to ruments in optics. Apparatus for regulating t. Large apparatus of rotatory polarization nd solids. Saccharometer or apparatus for e nature and the quantity of sugar con- y sacchariferous liquid. Arago's polariscope g conspicuous the smallest vestiges of polarized jamin's apparatus for investigating the laws on. Brewster's stereoscope. Apparatus for e of compensation. Fresnel's press. Apparatus erg, the most convenient practical polarizing Cyano-polarimeter of Arago for measuring of the polarization, and of the blue colour of ago's sciopoleoscope, by means of which a per- inguish by polarized light the rocks hidden waters.

DECHÈNE, —, 7 Rue Geoffroy Langerie, Paris—Hatter.

of silk and felt spring hats, with boxes. of self-acting mechanical hats. By an inge- nism these hats open without effort when he head, and preserve their appearance and indefinite period. of the Napoleon hat. These hats were in- patented by the exhibitor.

DETOUX, CHARLES LOUIS, 4 Rue Fontaine- ou-Roi, Paris—Manufacturer.

ic stockings and belts made by machinery.

DEFOSSÉ, —, 13 Rue St. Dominique, Fau- y St. Germain, Paris—Manufacturer.
of hunting-boots.

DEFOSSÉ, —, 24 Rue de la Paix, Paris; and 4 Bond Street, London—Manufacturer.
ladies' boots and shoes.

DEID, J. M., 27 Boulevard des Italiens, Paris—Manufacturer.

leather for carving and ornamental hangings. r. Etagère article of furniture. Leather hangings, and various other samples of leather

DEMAS, EMILE, 6 Rue Folie Méricourt, Paris—Manufacturer.

of preserved food.

DEMASQUER, J. P., 29 Montée St. Bartholomy, on (Rhône)—Inventor and Man. for inv. gent, J. BUNORANDI, Bishopsgate Churchyard, atresses and beds. Seats for families, car-

ic mattress, manufactured with the spring the exhibitor possesses all the advantages of rees, and has none of its disadvantages. It is simple, light, and solid; it forms a soft- able couch; and its pliancy may be varied the will of the possessor. The upper tickling,

when worn or soiled, may be easily removed, so as to answer all the purposes of health and cleanliness. The springs are plated by means of a composition, which pre- serves them from rust, and gives them a pleasing appear- ance. No horsehair or similar matter is employed likely to produce a disagreeable smell; and the construction is such, that should the spring become undone, or any part of the couch be accidentally injured, the repair can be easily and quickly effected. These spring mattresses are well adapted to iron bedsteads; and by a suitable arrange- ment of the springs on the bands, the wooden case re- quired in other mattresses is dispensed with. They are calculated to supersede the use of straps or canvases on bedsteads; and are useful in country houses, in hotels, in establishments for mineral and other waters, and in places of frequent and general resort.

The elastic mattresses for wooden or iron bedsteads being easily undone, are particularly adapted for emigra- tion, military trains, colonies, and in general for all sorts of exportation, and for beds in cabins, and on board steamers. Mattresses with lower springs are especially manufactured for these purposes.

The use of these springs is not, however, confined to elastic beds and mattresses; it is adapted to all sorts of seats, such as sofas, arm-chairs, other chairs, seats in stage coaches, omnibuses, vehicles of every description, including steamers and every other mode of travelling. The cir- cumstance of its working in the direction of the fibre of the metal of which it is made, renders it capable of re- sisting the most violent concussions.

1206 **DURAND, BOUCOURT, & PILLARD, 68 Rue des Carmes, Rouen**—Confectioners.
Sugar of apples and cherries. Jellies. Sugar candy.

1207 **DURAND, E. P., 6 Rue St. Claude (Marais), and 105 Boulevard Haumarchais, Paris**—Manufacturer.

Large mahogany book-cases with sculptures, in the style of the renaissance. A large oak side board, with sculptures representing fruit, &c., hunting and fishing equipments. A collection of chairs in the styles of Louis XV., Louis XV., and Louis XVI.; and two chairs of a new style, the sculp- ture of which consists of intermingled roots.

1208 **DURAND, G., 8 Rue Mauv Stuaul, Paris**—Manufacturer.
Tanned strong and calf leather.

1209 **DEUXIEM, —, 346 Rue St. Denis, Paris**—Manufacturer.
Samples of silk ribbons for trimming.

1210 **DUVAL, M., Paris**—Manufacturer.
Chemical products. Cakes of onions, of coffee with milk, and of chocolate subdivided into cakes. Metal hangings, ivory, and metallized horns and bones.

1211 **DUPRE & DURAND, 10 Rue des Deux Bœufs, Paris**—Brass founders.

A statue of Cupid clipping his wings, by Bouchardon. A town dancing on goat skin, by Lequeux.

1212 **EMMERICH, J. B., & GILBERTIN, jun., St. Omer (Pas de Calais)**—Manufacturers.

Morocco leather of various colours. They possess a lot of velvety. Gilt morocco, green and black. Gilt cheap skins.

1213 **ENTIER & DELEMANNE, 6 Rue de Valenciennes, Paris**—Manufacturers.
Specimens of metallic pearls.

1214 **ENTIER & DELEMANNE, 6 Rue de Valenciennes, Paris**—Manufacturers and Tanners.

Brass plates. Metal round in shape of one single piece. Brown skins. Tanned leather from Hun-

- 1215 ETEX, ANTOINE, *Institute de France*—Sculptor.
Two groups in plaster—one representing Cain's family; the other, the Cholera.
- 1216 ERNEST, Madame, 28 *Rue Bourgoyne, Paris*—Manufacturer.
Specimens of stays without seams.
- 1217 FARJON, HENRI, *Roquemaure (Gard)*—Silk-throwster.
Specimens of raw silk and organzin.
- 1218 FAURE, —, 24 *Place de la Madeleine, Paris*—Sculptor.
A figure carved on a single piece of wood.
- 1219 FAURE, —, 14 *Rue de Faubourg St Denis, Paris*; Depôt in London, 27 *Great Russell Street*—Manufacturer.
Ebony buffet, with bronze ornaments. Chairs. Easy-chairs in different styles.
- 1220 FAVREL, A., 27 *Rue du Caire, Paris*—Goldbeater.
Gold and silver beaten into leaves, for gilding. Gold and platina for dentists. Gold, silver, and bronze, in shells. Gold-leaf prepared for the American market.
[Gold, when pure, is capable of being beaten into leaves only $\frac{1}{320000}$ th of an inch in thickness. In this state it is translucent, transmitting light of a beautiful green colour. Platinum is much harder than gold, and not by any means so malleable, although its ductility and tenacity are very great. Gold has been formed into wire of which 550 feet weigh only a grain, and which is only $\frac{1}{5000}$ th of an inch in diameter; but platinum has been reduced to a wire of one-sixth of this diameter.—D. T. A.]
- 1221 FAYET-BARON, —, at Messrs FONTAINE, 269 *Rue St. Honoré, Paris*—Locksmith.
Safety-lock, for bankers' safes, of simple mechanism and easy application. It is considered to be impossible to pick this lock.
- 1222 FORGES OF BIGNY—Producer.
Specimens of iron casts, and wire.
- 1223 FLORENCE, —, jun., 20 *Rue du Faubourg St. Antoine, Paris*—Manufacturer.
Ebony and rosewood furniture, with gilt bronze mountings.
- 1224 FLORIMOND, —, 8 *Rue Montigny, Paris*—Manufacturer.
Artificial flowers; head dresses; flowers and fruits.
- 1225 FONTAINE, FONTAINE, 16 *Rue des Capucins, Lyons (Rhône)*—Manufacturer.
Specimens of silks for vestings; plain and figured velvets; figured velvet ribbons, and borders for ornaments of ladies' dresses; bonnets and caps, "velours épinglé," in all the different qualities; damasks and brocatelles for furniture, and other novel fabrics.
- 1226 FONTAINE, FELIX, *Rue de Jeuneur, Paris*—Manufacturer. (Agents, EYLES, EVANS, & Co., *Ludgate Street*.)
Specimens of corsets woven on patent loom, without seam, called "plastic bodice," adapted to the different conformations of the body, with a view to health and elegance. Exhibited for workmanship and cheapness.
- 1227 FONTAINE, PAUL LOUIS, 56 *Rue du Faubourg St. Honoré, Paris*—Manufacturer.
Screws for fastening the hose of fire-engines or watering machines. Loop-joint for conveying water. Watercocks; floating-cocks, with appendage. Valve. Carcass of a piston-pump.
- 1228 FORTON-DUPONCEAU & Co., *Chattemone (Mayenne)*—Producers.
Slate billiard table.
- 1229 FOUCHÉ LE PELLETIER, EDMOND EDGAR FRANÇOIS, *Javel, near Paris*—Chemical Producer.
Design representing an apparatus constructed of grit stone and lead, for the better manufacturing of sulphuric acids. This new system effects an economy in the working stock of 80 per cent., and in the production of 35 per cent., with the usual quantities. Mineral and vegetable acids; sulphuret of potassium; chlorate of potash; crystallized arseniate of potash; artificial soda; salts of ammoniac; of barytes, of strontian, of zinc, and of lead. Manure.
- 1230 FOUQUEAU, LECOMPTE, *Orleans (Loiret)*—Manufacturer.
Rich billiard table.
- 1231 FOURDINOIS, ALEXANDER GEORGES, 46 *Rue Anetot, Paris*—Manufacturer.
A walnut sideboard in the renaissance style, supported by six hounds, of which two are in profile; in the centre is a large trophy of dead animals; on each side are panels and fruit. The pilasters are adorned with four figures representing the four quarters of the world; on the right is a hunter, and on the left a fisherman, as brackets. The figure on the top represents Abundance; on each side are groups of children reaping and gleanings. Some parts of the wood are tinted to give more life to the carving.
A chair also in the same style as companion to the sideboard.
A chiffonnière in the Louis XIV. style, with marquetry in copper and tortoiseshell, and gilt ornaments.
A small round table gilt, representing a child climbing the grape vine.
- 1232 FOX, J. F., *St. Genis Lavel (Rhône)*—Manufacturer.
Terra cotta and glass tiles, for admitting daylight into granaries and hothouses. These tiles are sufficiently strong to resist the effects of hailstones, which are often extremely destructive in some of the French departments.
- 1233 FRANC, SON, & MARTELIN, *Lyons (Rhône)*—Silk-spinners.
Various samples of threads, combed wools, fancy twists.
- 1234 FRANCHE, CHARLES, 42 *Rue de l'Université, Paris*—Manufacturer.
Two repeating pianofortes, with double forte pedals and improved iron bar, of different shape and mechanism.
- 1235 FRATIN, —, 43 *Rue de Trevisé, Paris*—Sculptor.
Group of eagles, in bronze. Tables tripod with feet representing the heads and legs of stags and horses; a stag; a group; stag pursued by dogs; group, two eagles fighting for their prey; a lion bearing off a wild boar.
- 1237 FRIBY & RIGA, 124 *Rue St. Jacques, Paris*—Manufacturers. (Agent, M. de FONTAINE MOREAU, 4 *South Street, Finsbury*.)
Typographic proof-sheets. Steel composing pins and punches.
- 1238 GAASS D'AGNEN, VICTOR, *Blind Children, National Asylum, Paris*—Producer.
Geographical maps in relievé. Two boards of raised letter-writing, with bodkins and gratings, &c.
- 1239 GALY-CAZALAT, —, 14 *Rue Charlot, Paris*—Manufacturer. (Agent, M. de FONTAINE MOREAU, 4 *South Street, Finsbury*.)
A new oscillating engine, patented for Great Britain. A frame containing five manometers, patented in France;

- two large manometers; a safety apparatus in cases of boiler explosions, patented in England.
- 1241 GANTILLON, C. E., 2 *Rue des Capucins, Lyons (Rhône)*—Manufacturer.
Back of a couch, representing the Lake of Como. Back of easy chair, with a view of the environs of Naples. Back of chair: Ganymede and Jupiter's Eagle. Silks for furnishing.
- 1242 GAUSSEN & Co., 1 *Rue de la Banque, Paris*—Manufacturers.
Specimens of cashmere scarfs, and novelties.
- 1243 GAUSSEN, jun., FARGETON, & Co., 2 *Place des Victoires, Paris*—Manufacturers.
Specimens of shawls: French cashmeres.
- 1244 GAUTHIER, JEAN, 4 *Faubourg Montmartre, Paris*—Japanner.
Lacquered morocco leather of all colours.
- 1245 GAUTHIER, BOUCHARD, 14 *Rue du Cloître St. Marie, Paris*—Producer.
Specimens of ochres of different qualities.
- 1246 GERMAIN, SIMIER, 20 *Rue Poissonnière, Paris*—Lithographic Printer.
Safety papers, precluding the forgery of bank notes, shares, bonds, &c., engraved on natural steel plates, producing each three or four millions of proofs. It would be impossible for even the manufacturer himself to manufacture two plates exactly alike.
- 1247 GINDRE, LOUIS, 23 *Rue des Capucins, Lyons (Rhône)*—Manufacturer.
Plain silks. Satins of various dyes.
- 1248 GIRARD & Co., 19 *Pont St. Clair, Lyons (Rhône)*—Manufacturers.
Silk velvet, of various shades.
- 1249 GIBOD, Le General, *Chevry, near Gez, Ain*—Producer.
Agricultural produce. Fleeces of merino wool, from the flock at Nuz. The flock at Chevry, by origin a pure Merinos breed, was established in 1798, and has supplied, ever since, numerous breeding rams and ewes, not only to France but also to Wurtemberg, Austria, Hungary, the Crimea, Sweden, Rio de la Plata, and even the English possessions in Australia.
- 1250 GIBODON, A., 30 *Quai de Retz, Lyons (Rhône)*—Manufacturer.
Specimens of silk cravats. Novelties in taffety, satin, stuffs &c.
- 1251 GODDET, A., 130 *Rue St. Lazare, Paris*—Manufacturer.
Pistol, carbine, and fowling-piece, double-barrelled and four-barrelled.
- 1252 GODEFROY, LÉON, 4 *Quai National, Puteaux (Seine)*—Manufacturer.
Printed fabrics: square shawls and scarfs; dresses and various kinds of stuffs.
- 1253 GORSAS & PÉRIER, *Limoges (Haute-Vienne)*—Manufacturers.
Table services in porcelain, and various other articles in white and ornamented china.
- 1254 GRADÉ, LOUIS, 9 *Rue Castex, Paris*—Manufacturer.
Two bureaus with shelves. Large shelf-stand. Toilet table. Parlour table of inlaid-work. Working table, &c.
- 1255 GRANDVAL, J. B., *Hôtel Dieu, Rheims (Marne)*—Chemist.
Patented pharmaceutical products, tincturing, and alimentary products, obtained in a vacuum by means of a breccated apparatus.
- 1256 GRANGOIR, JEAN MARIE, 22 *Rue St. Appoline, Paris*—Locksmith.
Locks, for strong chests, pocket-books, and room doors, invented by the exhibitor.
- 1257 GRASSOT & Co., *Place du Collège, aux Chapennes, near Lyons (Rhône)*—Manufacturers.
Damasked linen, napkins, table-cloths, &c., for tea, breakfast, and other table services.
- 1258 GRIFFON, BROTHERS & SISTER, 15 *Quai des Bourbon, Paris*—Dyers.
Specimens of silk fabrics, velvets, ribbons, hosiery, trimmings, laces, blondes, gloves, &c., washed and dyed by a new process, which removes grease and spots of all kinds from the articles previous to dyeing. Specimens of sheep-skins prepared by the same process.
- 1259 GRILLET, sen., & Co., 11 *Place Croix-Paquet, Lyons (Rhône)*—Manufacturers.
Long Cashmere shawls, white and black.
- 1260 GRISON, —, 15 *Rue Bourg l'Abbé, Paris*—Manufacturer.
A planisphere. Different descriptions of lamp and light-house burners.
- 1261 GUERLIN-HOUEL, —, *Grenelle (Seine)*—Tanner and Currier.
Japanned, smooth, and grained calf leather.
- 1262 GUIHÉRY, DESLANDELLES, & Co., *Nantes (Loire-Inférieure)*—Confectioners.
Pies, pilchards, peas, and various other preserves.
- 1263 GUINON, H. P., *Lyons (Rhône)*—Dyer.
Specimen of pieric acid. Silks and woollen stuffs, dyed in various colours. Chromatic picture and circle.
- 1264 GUYON, EDMOND, 57 *Rue Galande, Paris*—Manufacturer.
Specimen of woollen and cotton blankets.
- 1264A GONSE & MAGNIER, *Bapaume (Pas de Calais)*—Manufacturers.
Clarifying powder for beer, stout, ale, and porter, &c.
- 1265 HAYEM, —, sen., 38 *Rue du Sentier, Paris*—Manufacturer.
Specimens of cambric shirts. Cambric fronts. Collars of all descriptions.—Patented.
- 1266 HENNECART, JULES FERDINAND, 30 *Rue de l'Échiquier, Paris*—Manufacturer. (Agent, M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)
Model of a bolting apparatus used in the French mills for dressing flour. Specimens of silk and gauzes of various qualities for bolting machines.
- 1267 HENRY, H. F., 69 *Rue des Marais, St. Martin, Paris*—Designer for Fabrics.
Manufactured designs for prints and fabrics.
- 1268 HERZ, HENRY, 48 *Rue de la Victoire, Paris*—Manufacturer.
Pianoforte organ. Grand pianoforte. Semi-grand pianoforte.

- 1269 HINDINLANG, —, sen., 24 *Rue des Vinaigriers, Paris*—Wool-spinner. (Agent, J. GAURY & Co., 8 *Walling Street*.)
Woolen yarn, cashmere down yarn, spun by machinery. Woolen and cashmere fabrics.
- 1270 HOUDAILLE, JOSEPH, 225 *Rue St. Martin, Paris*—Jeweller.
Specimens of jewellery in silver, gilt copper, silvered copper, steel, ivory, &c. Specimens for books, furniture, and ornamental book-binding.
- 1271 HOUETTE, ADOLPHE, & Co., 46 *Rue du Fer à Moulin, Paris*—Tanners.
Specimens of tannery and curriery: japanned calf leather for boots and shoes.
- 1272 HUMBERT & Co., *Dieuze (Meurthe)*—Manufacturers.
Specimens of gelatine.
- 1273 JAMB, BLANCHI, & DUSEIGNEUR, 4 *Rue Désirée, Lyons (Rhône)*—Silk-spinners.
Specimens of raw and wrought silks. Silk cocoons.
- 1274 JAULAIN, JULIEN, 11 *Rue d'Albony, Faubourg St. Martin, Paris*—Manufacturer.
Newly-invented organ; pianoforte with "panorgue," which may be placed under the key-board of the pianoforte, and may be annexed and attached without any alterations on the latter. The panorgue may be performed separately, or connected with the pianoforte, and may be adapted to all species of that instrument.
- 1275 JEANNIN, —, 81 *Rue de l'École de Médecine, Paris*—Manufacturer.
Twelve billiard sticks.
- 1276 JEANSELME, —, jun., 4 & 6 *Impasse St. Claude, au Marais, Paris*—Cabinet-maker.
Screens. Window-cornices. Easy-chairs, couches, chairs, &c.
- 1277 JEANTI, PREVOST, PERRAUD, & Co., *Rue d'Isly, and la Fillette, near Paris*—Sugar-refiners.
Specimens of sugar refinery: three loaves of refined sugar.
- 1278 JOLLY-LECLERC, —, 38 *Faubourg St. Antoine, Paris*—Cabinet-maker.
Rosewood book-case.
- 1279 JOUVIN-DOYON, —, 8 *Boulevard Bonne Nouvelle, Paris*—Glover.
Tools used in the manufacture of gloves. Raw skins. Dyed skins. Leather gloves.
- 1280 JULLIEN, —, *Tours (Indre and Loire)*—Manufacturer.
Trimmings for furniture.
- 1281 JUMEAU, PIERRE FRANÇOIS, 18 *Rue Mauconseil, Paris*—Manufacturer.
Specimens of dolls and dolls' wardrobe.
- 1283 KRIEGER & Co., 79 *Faubourg St. Antoine, Paris*—Manufacturers.
Furniture for drawing-rooms and dining-rooms, cabinets, sideboards, &c.
- 1284 LACARRIÈRE, AUGUSTE, 9 *Rue St. Elisabeth, Paris*—Bronzer.
Specimens of lustres, sconces, chandeliers, medallions, &c.
- 1285 LACHAPPELLE & LEVARLET, *Rheims (Marne)*—Spinners.
Samples of combed and carded woollen yarn.
- 1286 LACHASSAGNE, ALEXANDRE, 55 *Rue Meslay, and at Limoges*—Manufacturer.
Vases and groups in porcelain biscuit.
- 1287 LAHOCHÉ-BOIN, —, 162 *Palais National, Paris*—Manufacturer.
Gilt bronze-mounted and ornamented porcelain articles. Engraved and gilt crystals with similar mountings.
- 1288 LALANDE & CHEVALLIER, *Maur (Sarthe)*—Producers.
Chemical products: Sulphate of soda. Citrate of magnesia. Carbonate of magnesia. Sulphate of magnesia. Sample of dolomia. Oxide of magnesium. Hydroxide of magnesium.
- 1289 LAMBERT & SONS, *Toulouse (Haute-Garonne)*—Manufacturers. (Agent in London, P. DUPEBRIEU, 17 *Bridge Street, Southwark*.)
Paletots of felt cloths without seams. Rabbit and lambs' wool hats; grey woollen hats.
- 1290 LANDON & Co., 67 *Rue Montorgueil, Paris*—Perfumers.
Aromatic and antimephitic vinegar. Bitter essence (called Misbane).
- 1291 LANGE-DESMOULIN, —, 32 *Rue du Roi de Sicile, Paris*—Manufacturer.
Specimens of colours: carmine, lake, yellow of chrome, vermilion, cinnabar, madder-lake. The carmine is of singular beauty. This red colour, the extract of cochineal, is now employed in large quantities for all kinds of colouring and painting, on account of its moderate price and superior quality. Its scarlet and carmine lacquers, and its garancine shades possess great brilliancy. The chrome yellows, or chromates of lead, have the finest shades of pale gold which can be obtained in painting; and the cinnabar and vermilion possess shades of great richness. The manufacture of these colours in France is due to the exhibitor. They are of great utility in the manufacture of artificial flowers, their shades being a close approximation to nature; and in lithography their effect is very striking.
[The production of these articles has long formed a highly successful department of French industry. The carmine exhibited is employed to a large extent for colouring artificial flowers, for water-colours, &c. The lakes are used for colour-printing on stone, and are an inferior extract of the colouring matter of the cochineal insect. Some of the specimens of lake are in a semi-crystalline form; these are also used by artists. Specimens of chromate of lead and of French vermilion, both of great brilliancy of colour, are likewise exhibited.—R. E.]
- 1292 LAPEYRE & DOLBEAU, 1 *Place Romain, Lyons (Rhône)*—Manufacturers.
Specimens of figured silks. Damask stuffs and shawls.
- 1293 LARCHER, FAURE, & Co., *St. Etienne (Loire)*—Manufacturers.
Specimens of silk ribbons.
- 1294 LARENAUDIÈRE, FERDINAN, late GUYOT, 5 *Rue de Mouton, Paris*—Manufacturer.
Writing inks of divers colours, and for copying letters. A copy of a letter can be taken several hours after it is written with this ink.
- 1295 LEFORT, —, sen., 12 *Rue Mauconseil, Paris*—Manufacturer.
Specimens of artificial flowers and fruits.

- 1296 LAURENÇOT, ETIENNE, 8 *Rue Neuve Bourg l'Abbé, Paris*—Brush-maker.
Specimens of brushes of all descriptions, in ivory, bone, and buffalo horn.
- 1297 LAURENT, FRANÇOIS, 98 *Rue Ménilmontant, Paris*—Carver.
Ornaments for framework. Mosaic and marquetry for floorings. Large mirror in the Pompadour style, carved and ornamented, ready for gilding. Frame in the renaissance style. Frame, in ebony, incrustrated and gilt by machinery.
- 1298 LAVERNEE & MATHIEU DIT VERGER, Uzès (*Gard*)—Producers.
Silk spun from cocoons on the system of Verger. The same silk wrought and thrown.
- 1299 LAVOISY, AMELEE DESIRE, 180 *Rue Montmartre*—Inventor.
Improved mechanical churn, producing butter in less than ten minutes, so easily set in motion that a child could manage it.
- 1300 LEBEL, LOUIS, *Soissons (Aisne)*—Inventor.
Tow-boat, with double reversed torsion.
- 1301 LEBLOND, JN. DES., 5 *Rue St. Louis au Marais, Paris*—Manufacturer.
Lay figures of men and women, with an application of caoutchouc, for artists. Patented.
- 1302 LECLERCQ, N., 17 *Rue Chapon, Paris*—Manufacturer.
Specimens of gelatine, in white and coloured leaves.
- 1303 LECOQ-PRÉVILLE, —, 50, 52, & 54 *Passage du Saumon, Paris*—Glove Maker.
Specimens of kid gloves, of various dyes.
- 1304 LECOQ & RIEDER, *Billom (Puy de Dôme)*—Manufacturers.
Earthenware, and various specimens of ceramic.
- 1305 LE CROSNIER, MICHEL LOUIS, 7 *Rue Bourg l'Abbé, Paris*; and at *Bourget (Seine)*—Manufacturer.
Specimens of oil-cloths in various colours and patterns. Carpets of all sizes, for rooms, coaches, &c. Table-covers. Imitation leather for visors and tapestry. Black oil-cloth for military caps, hats, and cloaks. Oil-cloth, painted in various colours, with embossed designs for the manufacture of boxes and cases, and for hat-making and book-binding.
Oiled gauze and silk for use in surgery, and for the manufacture of balloons.
- 1306 LECUN & CO., *Nîmes (Gard)*—Manufacturers.
Floor carpets of all descriptions.
- 1307 LEDBENEY, CHARLES, *Rue de la Michodière, Paris*—Manufacturer.
Elegant mirrors, with gilt and carved frames.
- 1308 LEFAUCHEUX, —, 37 *Rue Vivienne, Paris*—Inventor and Manufacturer.
Guns of various descriptions, rifles, fowling-pieces on the exhibitor's new principle, pistols, &c.
- 1309 LEFÉBURE DUCATEAU BROTHERS, *Roubaix (Nord)*—Manufacturers.
Figured woollen fabrics, for waistcoats. Fancy articles.
- 1310 LETESTUT, —, 118 *Rue du Temple, Paris*—Manufacturer.
Engines.
- 1311 LEFÈVRE, —, 21 *Rue Beaubourg, Paris*—Manufacturer.
Specimens of fancy papers.
- 1312 LEFÈVRE, ELIZE, *Gevoilles (Côte d'Or)*—Producer.
Specimen of wool in tufts.
- 1313 LEGRAND, DANIEL, *Avesnes-les-Aubert (Nord)*—Manufacturer.
Samples of cambrics and lawn; samples of hand-spun thread.
- 1314 LEJEUNE, EMMANUEL, *Rue St. Honoré, Paris*—Manufacturer.
Newly-invented waterproof felt and silk hats.
- 1315 LEMAIRE, A., 2 *Place du Caire, Paris*—Manufacturer.
Carved and gilt bed and window cornices. Curtain arms, and other ornamental articles.
- 1316 LEMAITRE, CLOVIS, *Pontfaverger (Marne)*—Manufacturer.
Merino fabrics, plain and dyed, of fine quality.
- 1317 LOUVET, —, *Soissons (Aisne)*—Manufacturer.
Specimen of dress leather.
- 1318 LEROLLE BROTHERS, *Rue de la Chaussée des Minimes, Paris*—Manufacturers.
Bronze clocks, chandeliers, cups, lamps, &c.; artistic bronzes, statuettes, groups of animals; fountains; vases, after the antique.
- 1320 LEROY-SOYEZ, Madame, *Masnières, near Cambrai (Nord)*—Manufacturer.
Bottles of various shapes.
- 1321 LESSIEUX & SON, *Rethel (Ardennes)*—Manufacturers.
Merino fabrics, plain and dyed.
- 1322 LETILLOIS, F. L. G., 47 *Rue des Noyers, Paris*—Manufacturer.
Specimens of varnishing and ornamental painting. Painting in imitation of marble, &c.
- 1323 LEVEN & SON, 43 *Rue de Lourcine, Paris*—Tanners.
Green calf-leather, from the abattoirs in Paris.
- 1324 LEVERT BROTHERS, *Rethel (Ardennes)*—Manufacturers.
Merino fabrics, plain and dyed.
- 1325 L'HUILLIER, EUGENE, 86 *Rue St. Martin, Paris*—Manufacturer.
Various kinds of feathers for mantel-pieces; head-dresses; clocks; screens in peacock feathers.
- 1326 LIRNARD, M. J., *Rue Plumet, Paris*—Wood-carver.
A carved walnut-wood clock, representing a boar-hunt. Small basso-relievo, carved in pear-tree, divided into three panels, in which are represented stags, foxes, partridges, &c.; the panels in a rustic frame, ornamented with vegetation, animals, and game attributes, grouped in a picturesque manner. (*Main Avenue.*)
- 1327 LION BROTHERS & Co., *Place des Petits Pères, Paris*—Manufacturers.
Brocaded woollen or Cashmere scarfs and square shawls.
- 1328 DU LISCOET, SON, & Co., 42 *Rue Barbet de Soury, Paris*—Producers.
Samples of biscuit-beef. The biscuit-beef is, as its name indicates, an article which combines, in a portable form, the nutritious elements of bread, meat, and other ali-

mentary substances for the restoration of strength and the preservation of health. It is suitable for sailors during long voyages; and troops sent out to countries destitute of provisions. The biscuit-beef may be eaten without preparation, or mixed with water, when a substantial soup is obtained.

1329 LODDÉ, A. A., 50 Rue Bourg l'Abbé, Paris—
Manufacturer.

Plumes of feathers, and screens of all kinds. Various specimens of feathers.

1330 LOLAGNIER, —, 6 Rue St. Hippolyte, Paris—
Currier.

Kid, lamb, and sheep-skins.

1331 LUCAS BROTHERS, Bazancourt (Marne)—
Spinners and Manufacturers.

Samples of spun yarn, and plain merinos.

1332 LUCE, PIERRE NICOLAS, Versailles (Seine and
Oise)—Looking Glass-maker.

A chimney-mantelpiece ornamented with mirrors.

Quicksilvered mirrors reflect the heat in the interior of an apartment in the same manner that they reflect light, and they bear intense heat without cracking: this result has been obtained after a succession of trials. Experiments have been made at Versailles, when wood, coal, and coke were burned in the grate successively, with favourable results. The glass chimney-piece removes the objection to a fire-place in summer-time; for by placing before the grate baskets of flowers a pleasing effect is obtained.

This mantelpiece is represented in the accompanying Plate 245.

1333 LUER, A., 19 Place d'École de Médecine, Paris—
Surgical Instrument-maker.

Surgical instruments for operations of every kind, lithotripsy, amputations, cataracts, &c.

1334 MABIRE, —, jun., Rouen (Seine-Inférieure)—
Agriculturist.

Winter cerealia; red wheat (Spalding); red and white Russian wheats.

1335 MACE, JOSEPH MARIE, 5 Rue Neuve St. Augustin,
Paris—Corset Maker.

Tick corsets; silk corsets; tick belts.

1337 MAGNIN, J. VINCENT, Clermont Ferrand (Puy
de Dôme)—Producer.

French pastes, viz.: Pates d'Italie and flours, macaroni, vermicelli, semola, fancy pastes; various kinds of azotic grains; boiled vegetable flour; boiled chesnut and rice flour. The best description of hard wheat used for the manufacture of these pastes grows at the foot of volcanoes. The vast plains of Limagne, in Auvergne, were formerly covered by an inland sea, which was successively filled up by the alluvium, lava, and the detritus of volcanoes; thus the soil of the plain of Limagne is almost the only one of its kind in Europe. The semola of this hard red wheat produces pastes which equal in colour, quality, and transparency, the finest paste of Genoa and Naples.

1338 MAILLARD, FLORENTIN, 21 & 23 Rue Notre
Dame de Lorette, Paris—Manufacturer.

Beds; mechanical sofa-bedsteads; bed called Californian. Patented for the invention and improvement.

1339 MAILLE & SEGOND, 14 Rue St. Andre des Arts,
Paris—Manufacturers.

Vinegars, mustards, and fruits preserved in vinegar.

1340 MALLAT, JEAN BENOIT, 5 Rue Neuve, St. François,
Paris—Inventor and Manufacturer.

Everlasting pens, with ruby and diamond points, for teachers. These pens are made in gold and platina, and therefore preclude the possibility of oxidation arising from the ink. The extremity of their nib is formed of a point of ruby, or other equally hard substance. These points resist the action of the file, and even of the hardest stones. The sides of the nib retain always a perfect parallelism; they hold a sufficient quantity of ink in them to last for a long time without the necessity for renewing it; and they prevent all blurring or sputtering on the paper. Persons using these pens should have constantly at hand a small vessel with a sponge well steeped in water, in order that, after being used, they may be wiped and always kept in a clean and proper state for use.

1341 MANIGUET, NICOLAS, Vienne (Isère)—Manufac-
turer. (Agent, M. DE FONTAINE MOREAU, 4
South Street Finsbury.)

Cloths, leather, wool, and fancy articles.

1342 MANSARD, —, 93 Rue Richelieu, Paris—
Manufacturer.

Ornamented artistic stoneware.

1343 MINISTERE DE LA MARINE, Paris. (Rear-Admiral
MATHIEU, Director-General.)

Charts and maps of the coast of France, 216 in number; viz., 184 for the coasts in La Manche, on the Atlantic, and on the Mediterranean, surveyed by the corps of Hydrographical Engineers; and 32 for the coasts of Corsica, surveyed by the officers of the French navy.

1344 MARX & Co., au Vigan (Gard)—Manufacturers.

Two lithographic stones, one polished on both sides.

1345 MASSEMIN, C. L., 28 Rue de la Reynie, Paris—
Tanner.

Crusted calf-skins, curried calf-skins, glazed calf-skins, pair of legs, upper leather, and Clarence boots.

1346 MASSE, TRIBUILLET, & Co., 4 Avenue de Madrid,
Paris—Producers. (Agent, M. DE FONTAINE
MOREAU, 4 South Street, Finsbury.)

Stearine acids: wax candles, vegetable wax, paraffins, soaps, &c., produced by distillation. Process patented in England.

The products obtained by this new system of manufacture are exhibited for quality and cheapness. The most common, discoloured, and deleterious fatty matters can be used in the manufacture of the articles.

1347 MASSEZ, —, 24 Rue Aubry le Boucher, Paris—
Manufacturer.

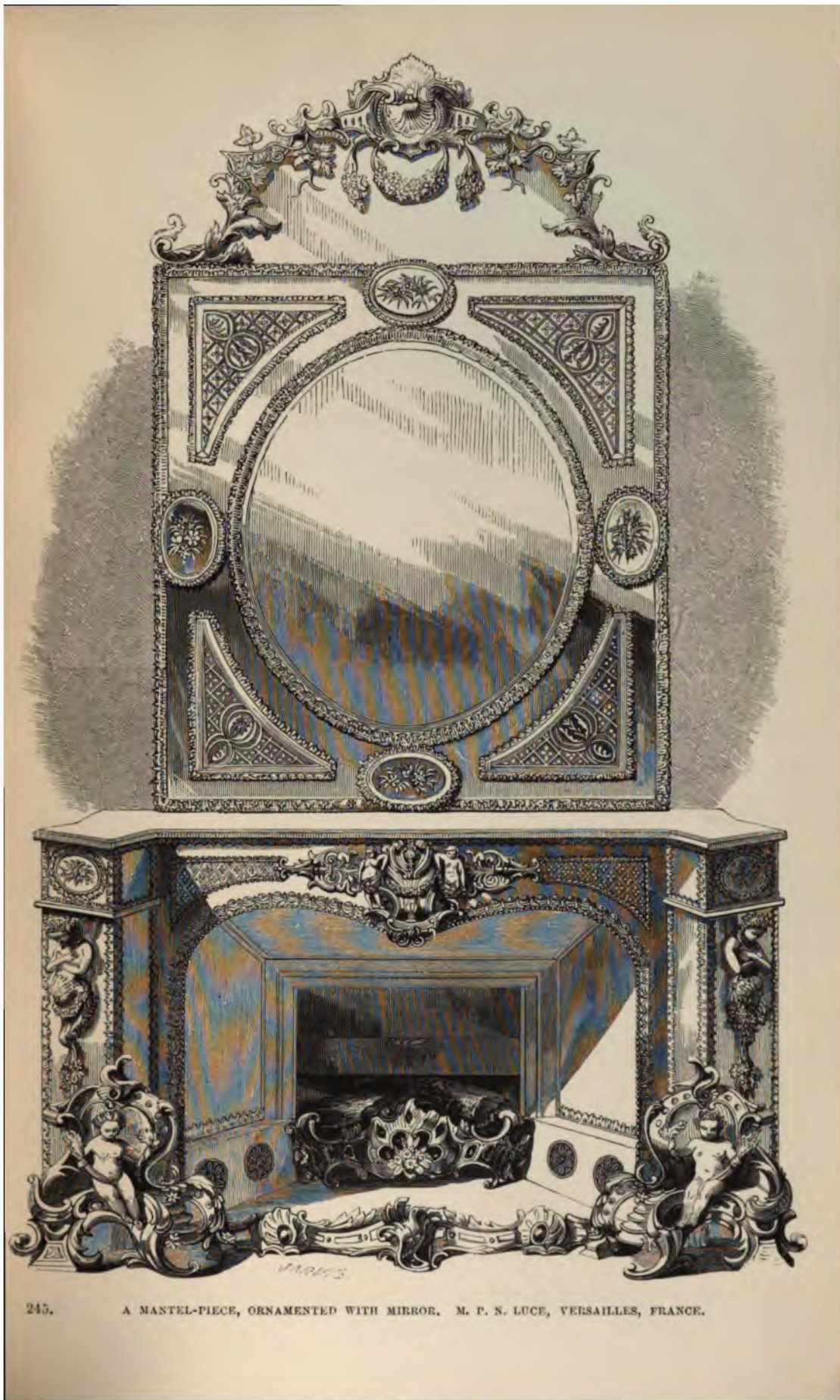
Boots, shoes, buskins, and slippers.

1348 MASSON, ETIENNE, 8 Place St. Michel, Paris—
Manufacturer.

Preserved food: specimens of a new method of preserving vegetables by submitting them to extreme pressure; every particle of moisture being extracted, they may be kept any length of time without losing their flavour, intended for the use of the navy and adopted by the French admiralty.

1349 MATHEVON & BOUVARD, Lyons (Rhône)—
Manufacturers.

Figured silk-stuffs of various colours for upholstery. Ornamental silk-stuffs, and gold and silver brocades for dresses, waistcoats, and carriage linings.



245.

A MANTEL-PIECE, ORNAMENTED WITH MIRROR. M. P. N. LUCE, VERSAILLES, FRANCE.

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1370 NACHET, —, 16 *Rue Serpente, Paris*—Optician.

A large microscope, with universal joint, moveable stage, and micrometer adjustment.

Moveable mirror for obtaining light under all angles.

A new microscope for chemical observations.

A new microscope for directing the dissections of transparent and opaque bodies. A small common microscope.

1371 NILLER, —, *Groville (Seine-Inférieure)*—Engine-builder.

Sugar-cane crushing machine.

Double lifting and portable pump. This apparatus is constructed especially for excavating, and may be applied with equal advantage to the shipping service. It discharges a greater volume of water with force, and acts with the same facility in muddy and sandy as in clear water; it combines strength and durability with lightness and simplicity, and may be set in motion without priming with water. These results have been obtained by means of improvements which consist principally in a frictionless piston, composed of different materials, according as it is to be used for hot or cold water.

1372 NOYÉ, FRANÇOIS, *Quai de Retz, Lyons*—Manufacturer.

Specimens of preserved food: vermicelli, chestnuts, and potatoes.

1373 NYS & Co., 132 *Faubourg du Temple, Paris*—Manufacturers.

Specimens of japanned calf leather for boots and shoes.

1374 OUDART, LOUIS, SON, & BOUCHEROT, 42 *Rue des Lombards, Paris*—Manufacturers.

Fruits preserved with steam and divers sugars.

1375 OUDIN & Co., *St. Herblain, near Nantes (Loire-Inférieure)*—Producers.

Sample of solidified milk.

1376 OUDIN, J. A. F., *Quai de la Fosse, Paris*—Producer.

Butter preserved with and without salt.

1377 PAILLETTE, PIERRE, 29 *Rue Grenier St. Lazare, Paris*—Brush Maker.

Hair and clothes brushes, in wood, buffalo-horn, and ivory. Fancy brushes.

1378 PARET, MARIUS, *Sedan (Ardennes)*—Manufacturer.

Specimens of broad cloths, kerseymeres, and satins.

1379 PARIS, C. E., 111 *Rue de Berry (Seine)*—Manufacturer.

Samples of galvanized sheet-iron. Enamels in a rough state.

1380 PATRIAU, CHARLES, *Rheims; Dépôt, Paris*—Manufacturer.

Woollen and cotton fabrics for waistcoats, cloaks, dresses, &c.

1381 PATURBE, LUPIN, SEYDOUX, SIBIER, & Co.; *Dépôt, Paris*—Manufacturers.

Pure wool, and woollen and silk fabrics. Barege. Muslins. Merinos. Summer materials.

1382 PAUWELS, ANTOINE, 179 *Faubourg Poissonnière, Paris*.

Apparatus for regulating the pressure and flow of gas used in the public streets. The lighting up of a town is effected by pipes placed underground, which transmit the gas where required; but the consumption varying constantly, the dimension of the pipes cannot be regulated beforehand in such a manner as to avoid, notwithstanding the ordinary regulator of the gas-works, the

introduction of a quantity larger than necessary for the wants of each division. This superabundance produces in certain parts too great a pressure, which causes a considerable waste of gas. The object of the apparatus, or gas moderator, is to regulate this supply. It is placed on the pipes underground, and, by a very simple mechanism, maintains a constant and invariable pressure, whatever may be the rapidity of the flow of gas. This affords a great advantage with respect to security and salubrity by diminishing the escape of gas. The greater regularity of supply effected by this new invention, insures a better regulated light. The gas moderator is eminently useful for hilly localities, its construction being solid and durable.

Gas regulator for consumers, for preserving an equal flame. Retort in fire-clay for the use of gas-works, new invention. Patented.

1383 PELLEVIN, CHARLES ALEXANDRE, 18 *Cour des Petites Ecuries, Paris*. (Agent, Mr. A. BROWN, 26 *Charles Street, Berners Street*.)

Melophones of various kinds (instruments imitating the human voice).

1384 PESTUGOL & CHASSANG, 21 *Rue de Gobelins, Paris*—Manufacturers.

Leather:—Legs of boots; upper-leather for shoes; black and japanned calf leather.

1385 PÉROT, GIULIO GIACOMO, 13 *Rue des Poetes, Paris*—Manufacturer.

Compositions and models of ornaments for jewel engravers.

1386 PICAREL, V., 11 *Rue St. Jean, Paris*—Manufacturer.

Specimens of wood carving and gilding.

1386A PÉREYRON, —, *Rue Neuve des Petit Champs, Paris*—Inventor. (Agent M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)

Specimens of a new kind of button, called "button clasp," which can be fixed to clothes without sewing. Invented by the exhibitor. Patented, February, 1851. This invention consists in a metal plate, or under button, on which is rivetted a small iron stem forming a loop for fixing the button shank, which is solidly fastened by flattening its extremity, which is then passed into the metal and rivetted.

The method of using this invention consists in simply making a hole in the cloth, which should be first lined with canvas between the two folds, in which is inserted the button shank, and on the other side is placed the button-clasp; a mode of fastening not hitherto surpassed. If the coat is a military one, it offers the advantage of being able to take off the buttons in order to better clean it without risk.

The inventor has also improved the buttons of braces; instead of making stitched button-holes, the centre of the button is punched, and through the hole is passed a small piece of iron wire, which is rivetted, and thus prepared to receive the button clasp. It is principally adapted for uniforms.

1387 PEYRON, SILVAIN, *Rumengol, near Brest (Finistère)*—Manufacturer.

Sieve-hoops of beech, sawed and bent by steam.

1388 RICHARD, A. F., 26 *Rue des Blancs Manteaux, Paris*—Jeweller.

Ornaments for head-dresses. Articles of jewellery. Imitation of gold and precious stones.

1389 PICQUOT, EUGÈNE, *Monville (Seine-Inférieure)*—Cotton-spinner.

Bundles and "cops" of unbleached mule-spun yarn.

- 1414 PUZIN, —, *Beaumont (Seine and Oise)*. Dépôt, 135 *Rue St. Denis, Paris*—Manufacturer.
Lace and trimmings for coach-lining. Lace for liveries. Designs for armorial bearings.
- 1415 QUERU, ADOLPHE, & Co., 14 *Boulevard, Poissonnière, Paris*—Designer.
Designs for fabrics of all kinds, carpets, and embroidery.
- 1416 RABOURDIN, —, 88 *Rue des Marais St. Martin, Paris*—Manufacturer.
Braces; garters; silk and India-rubber texture for ladies' stays.
- 1417 RAGUENET, ROLAND, 9 *Rue des Capucins, Paris*—Manufacturer.
Cast-steel carding-combs. Patented in France.
- 1418 BANCE, BALTHAZAR, *Rue Croix des Petits Champs, Paris*—Producer.
Bound books:—The Hotel de Ville (Town Hall) of Paris; St. Eustace Church; Parallels of the Streets of Paris; Encyclopædia of Architecture.
- 1419 RAMUS, JOSEPH MARIAS, 33 *Rue de l'Oueste, Paris*—Sculptor.
Marble group, representing Cephale and Procris.
- 1420 RABOT, —, 2 *Rue de l'École de Médecine, Paris*—Manufacturer. (Agent M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)
Models of bedsteads and apparatus for invalids.
- 1420 AROUSSY, C., *Ganges (Hérault)*—Agriculturist.
Specimens of cocoons and raw silk of all kinds.
- 1421 RASTOUIN, —, *Blois (Loire and Cher)*—Engineer.
Patent double receiver for the introduction of the axletrees of carriages, invented by the exhibitor.
- 1422 RAUCHER, L., jun., *Saumur (Maine and Loire)*—Manufacturer.
Pulverised horn. Pulverised black, from carbonized bones. Pulverised bones in their natural state. Black animalized manure. Pulverised flesh.
- 1423 RÉCY, CLAUDE M. HUBERT, *St. Amour (Jura)*—Producer.
Instruments for the use of deaf, blind, and paralysed individuals.
- 1424 REDELIX, HENRY, 25 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.
Screw-buttons, fastened without seam. Fashionable articles for dresses.
- 1425 REDIER, ANTOINE, 2 *Rue du Châtelet, Paris*—Clock-maker.
Clocks of various descriptions. Travelling repeating clock, new invention. Travelling repeating alarm clock, the striking part on a new principle. Works of a repeating clock; patented. Silver double-cased pocket chronometer. Watch for common use, prime mover on a new plan. Instrument for dividing the circle in equal parts for drawing. Pocket alarm watches. Guide for firemen of steam-engines. Horograph, an instrument for the use of railways for printing the time of the arrival and departure of the trains for each station. Metrograph, or controller of the speed of the trains; this apparatus indicates at every moment, and at every mile, the speed of the train, and the hours of arrival and departure at each station. Double marine chronometer,
- which marks the hour in all degrees of temperature, without the aid of the compensating balance. Patented.
- 1426 REGARD BROTHERS, *Darbes (Ardèche)*—Spinners.
Specimens of cocoons, and raw and wrought silk, for silk and plush fabrics.
- 1427 RÉGNY, LEON, & Co., *Loquefort la Nerthe (Ariège)*—Manufacturers. Dépôt, *Marseilles (Bouches du Rhône)*.
Hydraulic lime and cement, produced by the process of M. Henri de Villeneuve, Engineer. By this new process a superior hydraulic lime may be obtained from all carbonates of lime, without the addition of other substances, and whatever proportion of insoluble bodies they may include. Hitherto hydraulic lime could only be extracted from certain carbonates of lime not frequently met with in nature. The cement exhibited may be obtained of different degrees of rapidity in setting; some requiring six hours, others only a few seconds.
[The ancient Romans paid particular attention to their cements and mortars, the durability of which is attested by the remains of their walls; their renowned hydraulic cement is said to have been prepared with a mixture of volcanic sand and lime. Hydraulic cements are such as have the property of hardening under water, and are prepared by the calcination of argillaceous lime-stone, or with mixtures of lime and argillaceous earth. It appears from the acute researches of M. Vicat, that silica is an essential element in the formation of a good hydraulic cement, the setting of which he attributes to the basis silicate of lime passing to the state of hydrate by the absorption of water, for he found that alumina and magnesia did not give to lime the property of hardening under water, although they do not prevent the process of induration; he believes that the oxides of iron and manganese do not contribute in any way to the goodness of the cement.—W. D. L. R.]
- 1428 RIBERT, —, Inventor.
Clyso-irrigator.
- 1429 REICHMANN, ALEXANDRE, 21 *Rue St. Benoît, Paris*—Manufacturer.
Papers in rollers divided into squares, for reducing designs; memorandum books quadrilled for sketches.
- 1430 REIDON, EMILIEU, *St. Jean de Valeriscles (Gard)*—Producer.
Specimens of raw silk, and twisted silk for satin.
- 1431 RENARD, L., *Rue des Gravilliers, Paris*—Manufacturer.
Black varnish. Copal, for fans, for sculptures, and French siccativ.
- 1432 RÉPIQUET & SILVENT, *Place de la Croix Coquet, Lyon (Rhône)*—Manufacturers.
Novelties for waistcoats; galoons, velvets, and silk trimmings.
- 1433 RÉQUILLARD, ROUSSEL, & CHOCQUEEL, *Tourcoing (Nord)*; *Aubusson (Creuse)*; and 20 *Rue Vieille, Paris*—Manufacturers.
Coarse yarn for carpets; fine yarn for furniture. Tapestry curtain and panel, &c. Specimens of combed merinos, wrought by machinery.
- 1434 REULOS, ARMAND JOSEPH, 15 *Rue Geoffroy St. Hilaire, Paris*—Tanner and Currier.
Curried horse-hide straps.

- 1435 REYNIÈRE COUSINS, 19 *Rue Puits Gaillot, Lyon (Rhône)*—Manufacturers.
Neckerchief, shawls, and collars of various kinds of stuffs.
- 1436 RICHEZ, Madame, 323 *Rue St. Honoré, Paris*—Manufacturer.
Specimens of silk and tick corsets.
- 1437 RINGUET-LEPRINCE, AUGUSTE EMILE, 9 *Rue Caumartin, Paris*—Manufacturer.
Drawing-room sideboard, with four doors, in ebony and gilt bronze, with medallions in carved ivory; style of Louis XIV.; 6 feet long by 4½ feet high, intended to support groups of figures, or vases.
Medal cabinet in ebony and pear-tree; style of Elizabeth; 4 feet wide by 8 feet high, with two doors, supported by a side table of the same materials, ornamented with statuettes after original designs; hard stones placed as medallions, and may be changed for medals or portraits at pleasure.
Ebony table, inlaid with tortoiseshell, brass, silver, and ivory, and ornamented in gilt bronze, with nine historical portraits: Louis XIV. and his ministers Colbert and Louvains, with Racine, Molière, Turenne, Duquesne, Descartes, and Lebrun. Gilt elbow-chair, covered with tapestry.
- 1438 RISLER & SON, *Cerney (Haut-Rhin)*—Manufacturer. (Agent, M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)
A machine called "a depurator," with a frame containing the produce of that machine. New preparatory machine for the winding of cotton, called the Equivalent.
- 1439 RIVART & ANDRIEUX, 1 *Rue de Normandie, Paris*—Manufacturers.
Furniture, with soft paste incrustations of porcelain.
- 1440 ROBERT, ALEXANDRE, & CO., *La Villette, near Paris*—Refiners.
Plate, small ingots, pieces of ingots forged in brass. Pure tin. Pewter box. Roll of tin-foil for looking-glasses, &c.
- 1441 ROBERT, GUERIN, *Pont-Faverger (Marne)*—Manufacturer.
Unbleached and dyed merino fabrics.
- 1442 ROBERT, FAURE CHARLES, 25 *Rue de Cléry, Paris*—Manufacturer.
Worsted lace of all colours; guipure silk lace, black and white worsted ribbons.
- 1443 ROBERT, MATHIEU, *Pont-Faverger (Marne)*—Manufacturer.
Specimens of unbleached and dyed merino fabrics, exhibited for quality and strength.
- 1444 ROBERT-WERLY, & CO., *Bar-le-Duc (Meuse)*—Manufacturers.
Seamless stays, manufactured on a new system.
- 1445 ROBICHON BROTHERS, & CO., *Givors (Rhône)*—Manufacturers.
Specimens of window glass of various colours.
- 1446 ROKEC, LOUIS, 10 *Rue du Griffon, Lyon (Rhône)*—Inventor.
Silk meter, an instrument, the object of which is to ascertain the different qualities of raw and wrought silk.
- 1447 ROBIN, LOUIS, 32 *Rue Grenétat, Paris*—Manufacturer.
Various articles in bronze, cups, bouquets, &c. Bronze clock-bells of different designs.
- 1448 ROGER & SON, *La Ferté-sous Jouarre (Seine and Marne)*—Manufacturers and Proprietors.
Tiles of various qualities; millstones of all descriptions and dimensions; draining-tiles; the produce of the quarries of the exhibitor.
- 1449 ROGER BROTHERS & CO., *Brie-le-Château (Oise)*—Wool-spinners.
Assortment of woollen threads.
- 1450 ROISSARD, JULIEN MARIE, 58 *Grand Rue, Finistère (Brest)*—Cutler.
Various specimens of cutlery. Surgical instruments, chiefly intended for surgeons in the marine service.
- 1451 RONCHARD, SIAUVE, *St. Etienne (Loire)*—Gunsmith.
Double-barrelled gun, with 15 shades of damask on each barrel, at equal distances. All the shades are different, and are produced by iron and ornamentation.
- 1452 ROSSELET, CHAS. PHILIPPE HONORÉ, 3 *Rue de la Madeleine, Paris*—Inventor and Manufacturer.
Gold-reviving fluid for renovating gilding, lace-work, stuffs, and silks, gold and silver embroidery, military uniforms, &c. Patented.
- 1453 ROSSET & NORMAND, 48 *Rue Vivienne, Paris*—Manufacturers.
French long and square cashmeres. Black chantilly lace, and Alençon point lace.
- 1455 ROUGET DE LISLE, THOMAS AMEDÉE, 25 *Rue des Tracy, Paris, and 167 Regent Street, London*—Inventor.
New apparatus for the composition of designs for fabrics, with a sliding lamp and two reflectors for the purpose of enlarging and reducing the scale of designs.
- 1456 ROUGET, SON, & CO., *Chatenay, near Nantes (Loire-Inférieure)*—Curriers.
Two thick hides, and two shoulder-belts.
- 1457 ROUSSEAU BROTHERS, 9 *Rue de l'Ecole de Médecine, Paris*—Sugar Boilers.
Sugar-loaves, unrefined. Patented in England.
- 1458 ROUSSEL & DAZIN, *Roubaix (Nord)*—Manufacturers.
Woollen satin stuffs for dresses.
- 1459 ROUSSELOT & BARONNET, *Betheniville (Marne)*—Manufacturers.
Unbleached and dyed merino fabrics.
- 1460 ROUVENAT, LÉON, 62 *Rue Hauteville, Paris*—Jeweller.
Ornaments, bracelets, head-dresses, swords, and other articles of jewellery, gold, and diamonds, including a sword of honour for the British navy, in solid silver, chased and plated.
Models, in gilt bronze, of crowns, sceptres, swords, and sabres, executed in massive gold and mounted in diamonds, for several foreign powers.
Five different specimens of articles in gold and enamel, one of which is ornamented with diamonds, and adapted for a dress; it can be taken to pieces and used as a brooch, a bracelet, hair-pins, and ear-rings.
- 1461 ROYER, JOSEPH CHARLES ANATOLE, 55 *Quai de la Tournelle*—Manufacturer.
Specimens of gelatine leaves of all colours.
- 1462 ROYER, PIERRE EUSTACHE, 6 *Rue de Cañ Paris*—Manufacturer.
Specimens of artificial foliage.

- 1463 RUAUD, JN. BTE., *Limoges (Haute-Vienne)*—
Manufacturer.

Wrought specimens of earthenware, and porcelain, as statuettes, vases, &c.

- 1464 RUAS & Co., *St. André de Valborgne (Gard)*—
Spinners.

Specimens of white and yellow raw silk.

- 1465 RUDOLPHI, —, *3 Rue Tronchet, Paris*—
Manufacturer.

Silver work-table, embossed and chased. Enamelled casket, style 13th century. Plate, chased silver: subject, Mount Parnassus. The same, embossed silver: subject, the Triumph of Amphitrite. Silver chased casket: Bacchalian on a tiger. Enamelled chased silver casket, "Children Fighting." Lapis lazuli watch casket: subject, Massacre of the Innocents. A casket, in Florence mosaic, "Group of Dogs," the bodies of pearls. Reliquary in filigree: subject, "Charity." Chased casket, vine leaves. A goblet, Oriental agate, style 13th century. Lapis lazuli goblet in the style of the 15th century, fruit enamelled upon gold. Agate goblet, leaves of the maize, fine pearls, "Negroes and Serpent" Goblet in niello, and various others. Silver enamelled vase: subject, Group of Women and Turk. Two small enamelled vases, fine pearls: little figures of Cupids. Two silver gilt candlesticks, "Group of Children," fine pearls. Enamelled silver perfume-burner: "Little Children." Enamelled silver paper-holder, Venus and Cupid. Paper-holder: Duellists of the epoch of Louis XIII., bodies in pearls. Chased silver paper-holder: "St. George and the Dragon," set in rubies, pearls, emeralds, lapis lazuli, &c. Paper-holder inkstand, silver-gilt with gold, enamelled, fine pearls, &c. Chased silver bottles, Oriental form. Turkish pipe, chased silver: group, "Women and Sultan." Meerschaum pipe. Hand looking glass, chased silver, mythological subjects. Egg-cups, silver gilt, with gold. Jewellery: an assortment of bracelets, brooches, pins, chatelaines, necklaces, &c.

- 1466 RUOLZ, —, *53 Rue de Vernueil, Paris*—Inventor
and Producer. (Agent, Mr. J. HART, 62 King
William Street, City.)

Paints and waterproof varnishes, &c. These products, which are manufactured from the waste of the zinc foundry of La Vieille Montagne, at Liege, in Belgium, are prepared by a new process. They are then ground and mixed with linseed and poppy oils, combined with a certain quantity of turpentine and drying oil. The peculiar property of the waterproof paint is said to consist in its more effectually preserving the wood and iron on which it is applied than any other known paint or varnish, and in effectually preventing damp walls; suitable for railway waggons, iron work, &c.

Employed as plaster coating, and in thicker consistence, these paints protect damp and mouldy walls of every description, and prevent the effects of their humidity from penetrating through to their exterior faces. For the purposes of painting, they are used with great facility, by means of the ordinary painter's brush. As materials for plaster coating they should be applied in thin layers, with a flexible steel trowel. The preparation of the surface is effected by simply scraping over the damaged places, and by drying with a chafing-dish the moistened portions, in order to facilitate their adhesion.

This discovery is of importance for the preservation of shipping, wood and iron work, of naval and other construction, of waggons, railroads, iron, furnaces, &c., as well as for rendering houses more healthy.

- 1467 SABATIER, HENRI, *65 Palais National, Paris*—
Producer.

Daguerreotype portraits.

- 1468 SAGET, Widow, *17 Rue St. Elisabeth, Paris*—
Producer.

A sidereal light-house, with its fastening pulley. A lantern, with four regular reflectors. Various patterns of lanterns for locomotives, for signals, and hydraulic cranes. Sidereal lamp. Lighting apparatus for propagating light by means of parabolical reflectors; by this system a lamp with a burner of about an inch diameter is equal to 100 wax lights.

- 1469 SALLANDROUZE DE LAMORNAIX, *23 Boulevard Poissonnière, Paris*—Manufacturer (formerly
Royal Manufactory of Carpets at Aubusson).
Depôt, 12 George Street, Hanover Sq., London.

Velvet carpets; close-shaved carpets and tapestry; spun combed woollen yarn (at Filletin); carded woollen yarn, and carpet woven (at Morissart).

- 1470 SAMBUE, PAUL, *Vaison (Vaucluse)*—Silk-spinner.
Specimens of white and yellow raw silk.

- 1471 SARRAN, HTE., & DUFOUR, *Sauve (Gard)*—
Manufacturers.

Pitchforks, and hames for horse-collars.

- 1472 SAUVAGE, R., & Co., *5 Rue St. Polycarpe (Lyon)*—Manufacturer.

Specimens of silks. Stuffs of different shades, mohair, taffetas, &c.

- 1473 SAUTRET & SON, *Bétheniville (Marne)*—
Manufacturers.

Unbleached and coloured merino fabrics.

- 1474 SAUTREUIL, —, jun., *Fécamp (Seine-Inférieure)*—
Manufacturer.

A machine to plane wood, and to make mouldings in wrought and cast iron, brass, and steel, put in motion by steam.

- 1475 SCHMERRER, JEAN, *Tagolsheim, near Altkirch (Haut-Rhin)*—Inventor and Manufacturer.

A vertical hammer, moved by a cam. By means of a spring, of vulcanized caoutchouc, placed in the body of the hammer, the latter is gradually put in motion during the time of the compression and extension of the spring. The result of this improvement is ease in working the different parts of the machine, and considerable economy of the moving power. The hammer thrown by the cam is sent back by a second spring of caoutchouc placed in the upper part of the apparatus. The machine is put in motion by pulleys, and the variation of the number and the intensity of the strokes is easily obtained by extending the driving band more or less over the pulley. These vertical hammers may be substituted for the hammers with handles, from the smallest size up to those weighing ten hundred weight. They may be made to move with a velocity of 800 strokes in a minute.

The experience of three years in the use of four hammers in the manufactory under the direction of the exhibitor, and in the construction of 19 different vertical hammers, for various purposes, has enabled him to improve and to simplify the new hammers, and to render them superior to those formerly used.

- 1475A SCHNEIDER & Co., *Paris*—Producers.

Designs for machinery.

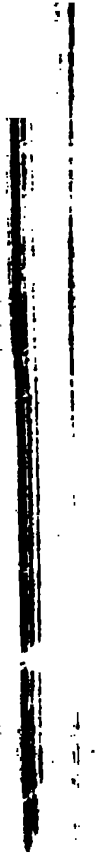
- 1476 SAVARD, —, *22 Rue St. Gilles, Paris*—Jeweller.

Locketts, chains, brooches, bracelets, &c., in lined gold; snuff-boxes, gorgets; complete set of ornaments.

[Lined gold is merely gold lined with copper. The manufacture of this article has increased greatly of late years. It consists of a standard gold leaf affixed to a leaf of some other metal, either by means of pressure, when hot, or by a chemical process.]



LETTER WEIGHT, AND A ROSE-WATER DISH, BY WAGNER. M. RUDOLPH, FRANCE.



1477 SAVARESE, PHILIBERT, 62 *Rue des Marais*,
Paris—Inventor and Manufacturer.

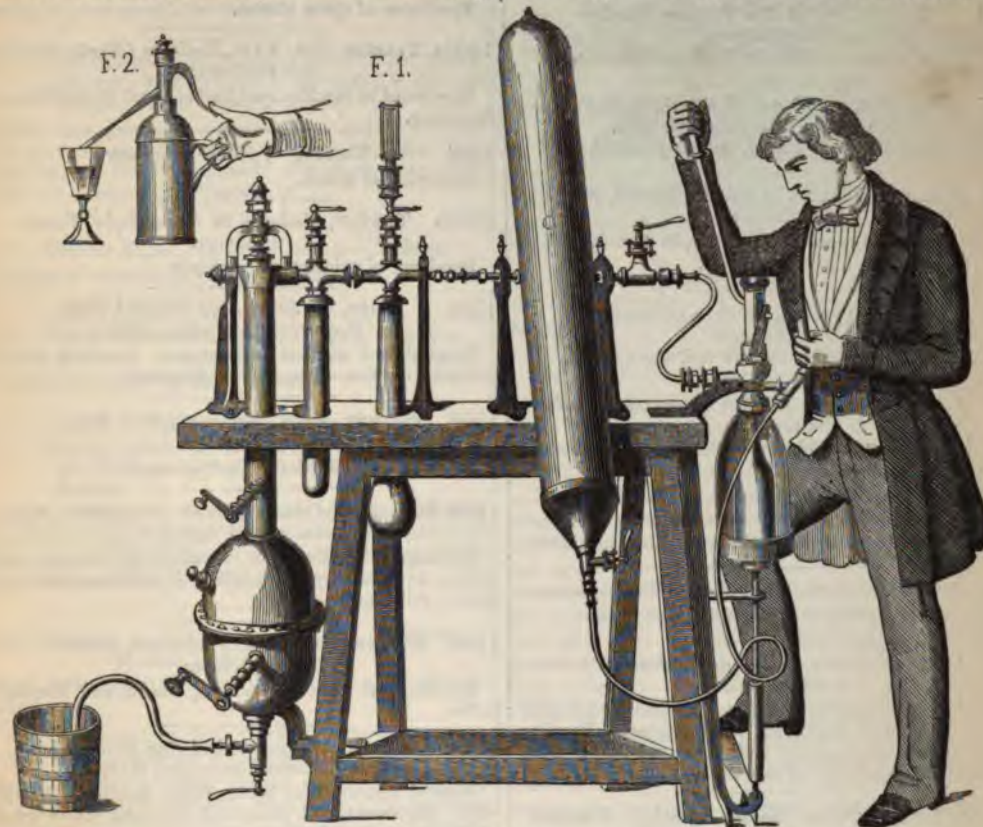
Apparatus for the manufacture and employment of aerated liquids.

One of these apparatus, Fig. 1, which is capable of manufacturing from 300 to 3,000 bottles of gaseous water per day according to the dimensions of which it may be constructed, is exhibited as a new invention for rendering all wines effervescent, whatever may be their age, as well as lemonades and other like beverages. It has the advantage

of requiring very little manual labour, and only one person to superintend its working.

The other apparatus, Fig. 2, consists of a vase called a *siphoid*, which is used to receive and to give out the gaseous waters as required. It possesses the property of keeping the liquids into which it enters in such a condition that, notwithstanding the frequency with which they may be drawn, none of the gaseous principles escape; so that the last glass is not found to differ in briskness or flavour from the first.

This apparatus is represented in the annexed cut.



Savarese's Apparatus for Aerated Waters.

1478 SAVARESE, JN. FS., JUN., 223 *Rue St. Martin*,
Paris—Manufacturer.

Specimens of strings for violin, bass-viol, &c. Artificial flowers.

1479 SCAMPS, PH., *Roubaix (Nord)*—Manufacturer.

Twilled pure cotton fabrics.

1480 SCHLOSS, WIDOW, & BROTHER, 14 *Rue Chapon*,
Paris—Manufacturers.

Portfolios, cash-boxes, porte monnaies, cigar-cases, cigar-holders, and steels. Patented in England. Baskets, knapsacks, and trusses.

1481 SCHLUMBERGER, JUN., *Thann (Haut-Rhin)*—
Cotton Printers.

Printed cottons, and woollen and cotton prints.

1482 SCHOLTUS, —, 1 *Rue Blue, Paris*—Manufacturer.

Two upright pianofortes.

These instruments are adapted for use in hot or damp climates. Iron cramps clamp the whole compass of the peg-board, traverse the under board on which the chords are hooked, also of iron, and are fastened at pleasure, by

means of a screw-nut and key. This prevents the boards giving way, however tightly the chords may be drawn. Besides these cramps, there are one or two iron bars, of a peculiar form, fixed before the sound-board, half over, half under the chords, without obstructing the mechanism. Above, they press on the peg-board to prevent its giving way; below, they fix the iron-board to which the cords are attached. With such a construction, the separation of the parts is impossible.

1483 DE SERIONNE, LOIN, & CO., 32 *Belleville, near Paris*—Manufacturers.

Porcelain knobs, white and coloured. Patented in England.

1484 DE SERLAY, C. G., *Gueurs (Seine-Inférieure)*—
Manufacturer.

Specimens of paper.

1485 SERRET, HAMOIR, DUQUESNE, & CO., *Valenciennes (Nord)*—Manufacturers.

Specimens of the principal products of beet-root.

The exhibitors, by means of a process for which they have obtained a patent, manufacture these products in the purest state. The beet-root being dried and prepared,

the best sugars are made from it uninterruptedly throughout the entire year. Of the samples which will be found most to merit attention, are Nos. 12 and 13 in the series; the former contains alcohol in a degree of purity, not found in the commercial article; the second contains a small quantity of potash, of an ascertainment strength and purity, superior to those of the finest potash of America. The quality of No. 3 is recognized as being equally fine. But chemical analysis alone could give an adequate expression of the superior properties embodied in these sugars.

1486 FÉREY, —, 10 Rue Favanne, Paris—
Manufacturer.
Samples of preserved food, in flasks and packets.

1487 BOUTIER, —, 23 and 25 Rue de la Vieille
Monsie, Paris—Manufacturer.
Biscuits biscuits, dried pastry, and gingerbread.

1488 SCHEU & HENRI, 179 Rue St. Honoré, Paris—
Manufacturers.
Bows for violins and violoncelles, in tortoiseshell or ebony, bordered with gold and silver.

1490 SOCHETRAUD, L., St. Jean de Gard—
Manufacturer.
Specimens of silk cords, and raw and wrought silk.

1491 SOCHROU, JR. M., 111 Rue Montmartre, Paris—
Chemist.
Specimen of Prussian blue, invented by the exhibitor.

1492 SOULÈS, MME. HYPOLYTE, 21 Rue de la
Michodière, Paris—Manufacturer.
Two corsets, in white watered silk, and in white satin.

1493 SOTER, AUGUSTE, Tenay l'Ais—Wool-spinner.
Specimens of washed, combed, and reeled wool.

1494 STOLIZ, GEORGE, 10 Rue de Bologne, Paris—
Machine-maker.
Model of an hydraulic apparatus. Watering and other pumps. Models of oscillating steam-engines. Riveting and perforating machines for iron, &c., on a new system. Exhibited for superiority of execution.

1495 ST. UERRY, Taches (Hauts-Pyrénées) Producer.
Eighty-four specimens of indigenous woods, prepared for cabinet work.

1496 TABOURDEAU, PIERRE, Montlins (Allier)—Cutler.
Knives with several blades. Carving-knife with haft in roebuck feet, ornamented with gilt silver. A complete flower stand, &c.

1497 TACHY, ALEXANDER, & Co., 24 Rue Dauphine,
Paris—Manufacturers.
Needles for the blind.

1498 TERRASSON DE MONTLEAU, J. A., St. Estèphe
(Charente) Producer.
Wool in fleeces.

1499 THÉRET, JOSEPH, 38 Rue des Saints Pères, Paris
Manufacturer.
Articles of furniture: mantle pieces, clocks, pictures, &c. Encausted and mosaic hard-stone relievos.

1500 THEVENET, RAFFES, & ROUX, 30 Rue Romarin,
Lyon (Rhône) Manufacturers.
Silk shawl. China crape. Watered Pekin, figured.

1501 TERRASSE-BAILLET, EMILE, Clemeat Forest
(Puy de Dôme)—Manufacturer.
Examples of church windows in different styles.

1502 TERRASSE BONAVENT, HENRI, Clay More la Pile
(Indre and Loire)—Manufacturer.
Samples of mill-stones, flour-tiles, pansels, and drains.

1503 THIBERT, JON, 31 Rue Michel le Comte, Paris—
Manufacturer.
Specimens of open glasses.

1503a THIBERT, SON, & Co., Toulouse (Haute-Garonne)
—Manufacturer.
Specimens of medals used for the tomb of the Emperor Napoleon.

1504 THIBERT, —, Paris—Producer.
Collection of tulips.

1504a THIBERT, MADAME, 28 Rue J. Eclair, Paris—
Producer.
Specimen of painting on porcelain.

1505 THIER, —, 39 Passage Choiseul, Paris—
Engineer and Machine Maker.
Surgical and medical instruments. Sockling bottles. Artificial nipples.—Patented in England.

1506 THIERRY, MINE, Melhouse (Haute-Rhin)—
Manufacturer.
Various kinds of printed Cashmeres.

1508 TOUAILLON, CHARLES, 12 Rue Capillière, Paris—
Inventor and Engineer.
Specimens of mill-stones. Machine for dressing mill-stones, invented by the exhibitor; millstone beds; silk sieves; mill machinery.

1509 TOURETTE, —, 39 Rue Richelieu, Paris—
Manufacturer.
Specimens of roasted Bourbon, Mocha, and Martinico coffee.

1510 TRIEBERT, FREDERIC, 132 Rue Montmartre,
Paris—Musical Instrument Maker.
Musical instruments: horns, flutes, hautboys, English horns; clarinet mouth-pieces with moveable sound board; newly invented reeds, for various instruments.

1511 TROCCON, ACHILLE, 14 Rue des Capucins, Lyons
(Rhône)—Manufacturer.
Shawls and cravats, of various silk stuffs.

1512 TRONCHON, NAPOLEON, 9 Avenue St. Cloud,
Paris—Manufacturer.
Iron articles of furniture for apartments and garden ornaments. Iron trellis-work, made by machinery. Conservatories, poultry-pens, gardening frames, dog-kennels, pheasant walks and aviaries. Light constructions for parks and gardens, such as summer-houses, bowers, &c. Tables, chairs, benches, fruit-baskets, flower-stands, artificial trees for climbing plants, cattle-enclosures, moveable folds, &c.

1513 TROUVÉ, A., 5 Passage Violet, Paris—Sculptor.
Frames decorated with ornaments in paste. Various objects and moulds of ornaments, in sulphur.

1514 VALANSOT, —, Lyon (Rhône), and 4 Rue Puits
Gaillot, Paris—Manufacturers.
Specimens of plain silks. Gros de Naples, curled, plushes, and taffety.

1515 VALANT, PIERRE TELEMAQUE, 23 *Rue de Seine*, Paris—Stationer.

Fancy stationery: ornamented letter-paper. Ornamented letter-paper, with illustrations. Improved envelopes, cut by machinery. Easy method of learning flower painting and every style of drawing without a master.

1516 VAN BALTHOVEN, PIERRE, 28 *Faubourg St. Antoine*, Paris—Manufacturer.

A cupboard, with mirrors. Bedsteads. Chest of drawers, in rose-wood, with marbles.

1517 VANTILLARD & Co., *Merovel, near L'Aigle (Orne)*. (Agents, L'HABITANT & GUYNET, 9 *Rue du Sentier*, Paris—Manufacturers.)

White iron pins, manufactured by a patent process. These pins are stronger, more brilliant, and have their points sharper than those made with brass wire. Exhibited for cheapness and durability.

1519 VERDET & Co., *Avignon, Vaucluse*—Producer. Samples of wrought silk and organzine.

1520 VEZON BROTHERS, *Ligugé, Poitiers, Vienne*—Producer.

Granulated gluten of different kinds.

1521 VIARD, LOUIS, 34 *Rue St. Martin, Paris*, and 45 *Wellington Square, Clerkenwell*—Manufacturer.

Various samples of colours and varnish, including a varnish to impart colour without rubbing, which dries in two hours, adapted for staircases, ship-cabins, wooden floors, &c., as well as all architectural ornaments.

1522 VILLEROI, —, C.E., 3 *Rue Pavée St. André, Paris*—Musical Instrument-maker.

New instrument of music, under the name of harmonine.

[The harmonine, an instrument of recent invention, is the only one amongst wind instruments, upon which a musician may produce various species of chords; and with the same powerful effect as may be produced by the keys of the harpsichord or piano-forte. It admits of various degrees of intonation, and gives free scope to the delicate touches produced by the movements of the tongue. It is likewise capable of producing the binforzando, and the smorzando passages. Its compass or extent comprises a chromatic scale of thirty-six notes, viz., from the bass C in the flute, to the fourth octave, or C above.

The sounds, which it emits with peculiar sweetness, are rather melancholy, and at the same time bear a strong resemblance both to the hautboy and the bag-pipe, as well as to the violin.

The mouth-piece of the harmonine, although in a direction opposite to that of other wind instruments, is of easy management, and it requires but little practice to obtain a certain degree of proficiency; even on a first trial, the least skilful musician may produce a melody of sound throughout the whole compass of the instrument. The fingering is simple and natural, especially for those who may have acquired a moderate proficiency on any other instrument.

The form of the harmonine, although singular is not inelegant, and being of smaller dimensions than the flute,

is equally portable. The harmonine being a complete instrument, may be used as an accompaniment, either in the orchestra or drawing-room.]

1523 VILPELLE, JULES, *Montereau-sur-Yonne (Seine and Marne)*—Manufacturer.

Sculptured steel dagger, of one single piece.

1524 VIGNAT BROTHERS, *St. Etienne (Loire)*, 3 *Place des Victoires, Paris*—Manufacturers.

Specimens of silk ribbons printed, figured and plain, of all kinds. Specimen of Chiné silk.

1525 VINCENT, HIPPOLYTE, 14 *Rue Neuve St. François (Marais)*, and 40 *Wigmore Street, Cavendish Square*—Inventor and Manufacturer.

Specimens of gelatine casts invented by the exhibitor. Specimens of the application of the galvano-plastic art to the gelatine casts, by a new process of electro-metalurgy.

[By means of gelatine reduced to a liquid state, elastic moulds can be taken capable of reproducing, with great accuracy, and in a single piece, casts of elaborately sculptured objects of remarkable finish and delicacy.

The process of casting consists in dissolving a certain quantity of gelatine in hot water until it is reduced to the state of liquid paste, when it is run over the object intended to be reproduced. As it cools, the gelatine assumes a consistency offering a considerable degree of resistance, and highly elastic, which latter quality enables it to be easily detached from the embossed work on which it has been fitted, although the complicated details of the subject and its cavities, might seem to render this process almost impossible. In the hollow formed by the gelatine a kind of plaster, prepared for the purpose, is next run; and when the plaster has acquired the requisite degree of hardness, the gelatine mould is detached in the same manner as from the original: and from this apparently fragile mould as many as six copies may be taken, all reproducing the original with great fidelity.

Many difficulties had to be overcome before this result could be obtained. The chief of these consisted in preventing the two plastic substances, each impregnated with a certain quantity of water, from becoming welded together, or retaining on their surfaces (thus put into juxtaposition) traces of the deposits of plaster or gelatine, which was constantly the case in the first experiments.

By the ordinary method of taking casts (namely, in plaster moulds, composed of several pieces), the work of the sculptor or engraver is frequently disfigured by the imperfection of the mould itself, and by the unskilful method employed to obliterate the marks of the seams, which impair the finish of the work. The new process retains the touches of the original, which the usual mode of casting generally destroys, especially when the model happens to be in wax or any other delicate material.

In the imitations produced by gelatine, even the material of the original may be recognized by the minute reproduction of the design, the veins, the lineaments, the irregularities of the surface, &c.

In the reproduction of anatomical specimens, muscle, artery, vesicle, membrane, &c., stand out in strong relief.

This application has already been highly serviceable to the arts of the sculptor, the chaser, the engraver, and the electro-typist; and to the sciences of anatomy, numismatics, natural history, &c.

Gelatine casts are now taken by a number of operatives, who have imitated this process, both in France and abroad. In Great Britain it forms an extensive branch of trade.]

1526 VINCENT, JULES, *Vallerangue (Gard)*—Silk Spinners.
Specimens of white and yellow raw silk.

1527 VINCENT, J., 9 *Quai des Tanneurs, Nantes (Loire-Inférieure)*—Manufacturer.
Boot legs, and upper leathers for boots.

1528 VIOLETTE, JULES H. M., *St. Omer (Pas-de-Calais)*—Manufacturer.

Ship biscuits baked by immersing the dough in high-pressure steam; plaster, baked by the same process, of a pure white colour, adapted for mouldings and statuary. Red wood charcoal, for the manufacture of gunpowder, prepared by the same method; this article has been adopted by some of the most extensive powder manufacturers in France, as it effects a saving of 40 per cent. Mercury distilled by immersion in overheated steam, by placing it in a vessel through which a current of vapour 350° centigrade is made to pass; the mercury converted into vapour, is carried off with the steam, and condensed with it in an outer vessel. This new manner of working mercury not only effects a considerable saving in the waste of the metal, but likewise obviates the dangerous consequences of the old methods on the health of the workman.

1529 VIVIER & Co., 1 *Rue Croix Paquet, Lyons (Rhône)*—Manufacturers.

Moiré (watered) stuffs, velvets, &c., and novelties of all descriptions for waistcoats.

1530 VITTOZ, —, 10 *Rue des Filles du Calvaire, Paris*—Manufacturer.

Artistic bronzes. Chimney ornaments. Clocks. Chandeliers. Vases. Cups and lustres. Statuettes and groups. Several of these groups are by Coustou, Clodion, Oudou, Pradier, Feuche, Pascal, Combervatt, Combett, Claymans, &c., and of elaborate workmanship.

One of these vases is represented in the Plate 250. A group of objects is also shown in the accompanying Plate.

1531 VOIZOT, E., 32 *Rue Bourg l'Abbé, Passage de l'Ancre, Paris*—Manufacturer.
Polished steel and imitation stones for jewellery.

1532 VOLKERT, —, 99 *Rue du Faubourg St. Antoine, Paris*—Cabinet Maker.
Specimens of veneering, on inlaid panels.

1533 VORUZ, J. S., sen., *Nantes (Loire-Inférieure)*—Manufacturer.
Railway carriage cushion.

1535 ZADIG, J. B., 28 *Rue du Sentier, Paris*—Manufacturer.

Specimens of gauzes, barèges, shawls, and scarfs. Fancy silks.

1536 ZUBER & Co., *Rixheim (Haut-Rhin)*—Manufacturers.

Specimens of white paper, paints, and artificial ultramarine.

1537 THE AGRICULTURAL SOCIETY AT LYONS (*Rhône*)
Specimens of spun silk and cocoons.

1538 ALLÉON, HENRY, *Annonay (Ardèche)*—Manufacturer.

Specimens of natural produce; albumen from eggs.

1539 CHATEMON SLATE COMPANY, *Jacron (Mayenne)*.
Specimens of slates for roofs, paving, and billiard tables.

1540 ANDELLE, GUSTAVE, *Epinac (Saône and Loire)*—Manufacturer.
Various samples of bottles.

1541 ANTHELME, ANDELIN (*Aisme*).

Lump of potash. Specimen of alum, which differs from the common alum, inasmuch as it does not contain any sulphate of ammonia, but only potash, and is obtained with the salts of potash from sea-water by the process invented by M. Balard, Member of the Institute of France.

1542 ARNOUX, CLAUDE, 25 *Rue du Mont Parnasse, Paris*—Inventor and Manufacturer.

A model, reduced to the scale of 1 to 5, of the articulated carriages for railroads of any curve, on the improved system adopted on the railway from Paris to Sochaux. This railroad presents, on an extent of 6½ miles, curves from 82 feet to 984 feet in radius. It has been opened since the 26th of June, 1846. During these five years the trains have travelled over 280,000 miles; the number of passengers being 3,000,000. The cost of traction, according to the account for the year 1850, was 2s. 2d. per mile, and the cost of repairs 1s. 11d. per mile, making the whole cost per mile 4s. 1d., the whole distance being 6½ miles, and one-third of it presenting an inclination of 1 in 90, which increases the expense in a very sensible manner. With the exception of the wheels to which the breaks are applied, none have been changed or renewed since the opening. Those of the goods-train have travelled over 138,000 miles, and are still in good working order. No accident has happened up to this day, 13th August, 1851.

The advantages of this system are,—1. The freedom of the axletrees to work round a pole-bolt, which keeps them constantly in a direction at right angles to the rails; and, 2nd. The freedom of the same axles to play upon their axis, as well as that of the wheels upon the barrels, a circumstance which offers a security against all catching of the wheels, prevents their slipping, and diminishes the resistance, by permitting each wheel to adapt its velocity to the distance to be passed over.

By means of this new arrangement, the revolution takes place in two directions at once, without any obstruction.

1543 AVISSEAU, CHARLES (*Indre and Loire*)—Manufacturer.

Specimens of enamelled pottery, a large rustic goblet, &c.

1544 AUBRY BROTHERS, 33 *Rue des Jeûneurs, Paris*—Manufacturers.

Dress, shawl, handkerchief, tippet, lace-lappets, piece of lace, and application lappets.

1545 AUDIAT, FERDINAND, 22 *Rue du Mail, Paris*—Manufacturer.

Embroidered tulle; imitation of lace and application.

1546 BÉRINGER, BEATUS, 6 *Rue du Coq St. Honoré, Paris*—Gunsmith.

Five fowling-pieces of various descriptions.

1547 BERNARD, LEOPOLD, *Rue Villejust, Passy (Seine)*—Gunsmith.

Damascus gun and pistol barrels.

1548 BERNOVILLE, LARSONNIER, & CHENEST, *Guise, St. Quentin, Puteaux and Mulhouse, and 23 Rue des Jeûneurs, Paris*—Manufacturers.

Samples of combed and spun wool.

Unbleached fabrics, prepared for printing and dyeing. Bleached fabrics prepared for printing, and for shawls.



281. BRONZE VASE. M. VITTOZ. FRANCE.

CARVED IVORY VASE. M. LAUTZ. FRANCE

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which extended from Barcelona to Dunkirk, it was reckoned to be 39·371 inches of the English standard yard, which contained 36 inches. Thus the French metre, which is longer than the English yard by $3\frac{1}{4}$ inches, or, more accurately, by $3\frac{1}{4}$ inches, is the standard of all the measures and weights of France. Its decimal multiples are successively denoted by the prefixes *deca*, *heca*, *chilio*, &c., which signify 10, 100, 1000, &c., times respectively; and its decimal submultiples or fractions successively by the prefixes *deci*, *centi*, *milli*, &c., which signify $\frac{1}{10}$, $\frac{1}{100}$, $\frac{1}{1000}$, &c., parts respectively. The metre itself was made the unit of lineal measure and itinerary distances. The *decametre* squared, which was called the *are*, and consequently contains 100 square metres, was made the unit of superficial or land measure; its centesimal multiple, *hectare*, contains 10,000 square metres, and its centesimal submultiple, *centiare*, 1 square metre. The *decimetre* cubed, which was called the *litre*, and therefore contained a thousandth part of the metre cubed, was made the unit of capacity for liquids; its decimal multiple *decalitre* contains 10 cubic decimetres, and its decimal submultiple, *decilitre*, one-tenth part of the cubic decimetre. The litre and its successive multiples, *decalitre*, *hectolitre*, &c., were also made the measures for dry goods, such as corn, &c. The cubic metre itself was made the unit of solid measures, and called the *stere*, its decimal submultiple, the *decistere*, containing a tenth part of the cubic metre. The weight of a cubic *centimetre* of distilled water, at the maximum density, was called the *gramme*, and made the unit of all measures of weight. This unit was found by careful experiments to be equivalent to 15·434 grains of English Troy weight; hence the *kilogramme*, the usual unit for commercial purposes in France, weighs a trifle more than $2\frac{1}{2}$ pounds of English avoirdupois weight. From the decimal relations which subsist among these different weights and measures, it plainly appears that the *kilogramme* is equal to the weight of a *cubic decimetre* of water, or of a *litre* of the same liquid at the maximum density. The capacity of the *litre* is therefore a trifle more than 61 English cubic inches, or about two-ninths of an English gallon diminished by a hundredth part of the two-ninths.]

1569 COULBOIS, —, *Avallon (Yonne)*—Leather Manufacturer.

Japanned leather, grained calf-skin for boots and shoes, and trimmings.

1570 COURTIN, RAOULT, 124 *Route d'Oliver, Orleans (Loiret)*—Manufacturer.

Barrel of vinegar, and various samples.

1571 COURTOIS, ETIENNE, 13 *Rue du Faubourg Montmartre, Paris*—Manufacturer.

Glazed calf-skins for boots and shoes, and all kinds of leather for saddlers, coach-makers, and harness-makers.

1572 COUSIN, —, 30 *Grande Rue Verte, Paris*.

Specimens of lithographic drawings on paper.

1573 CREMER, JOSEPH, 29 *Rue de l'Entrepôt, Paris*—Manufacturer.

A large piece of furniture with three doors, containing a writing-table, dressing-table, and pictures in mosaic and chequer work.

1574 CROISAT, JEAN, 76 *Rue de Richelieu, Paris*—Manufacturer.

Specimens of perukes without toupees. A machine for working hair in silk and other fabrics.

1575 DAFRIQUE, FELIX, 8 *Rue Jean Jacques Rousseau, Paris*—Jeweller.

Specimens of jewellery in gold, such as bracelets, leontines, chains, and cameo-brooches.

1576 DARBLAY, JUN., 16 *Rue des Vieilles Eves St. Honoré, Paris*, and 37 *Fenchurch Street, London*—Producer.

Two sacks and a barrel of wheaten flour.

1577 DARBO, F., 86 *Passage Choiseul, Paris*—Manufacturer.

Spiral suckling bottles; double pumps; artificial nipples; and bidet.

1578 DARNET, D., 83 *Rue Richelieu, Paris*—Manufacturer.

Shirts of extra fine linen cloth, with fronts embroidered with fine gold thread, in leaves and flowers. The gold thread will stand the effects of washing, like the linen. Exhibited for workmanship and style.

Shirts of extraordinary fine linen; the fronts similarly embroidered, with designs representing roses, tulips, &c.

Shirts of half Holland, with fronts of different designs, embroidered, full and in small fancy plaits.

Embroidered fronts for shirts, of various designs.

1579 DAUBET & DUMARET, *Lyon (Rhône)*—Manufacturers.

Various articles of furniture.

1580 DEDIER, CHARLES PAUL, *Ucel, near Aubenas (Ardèche)*—Manufacturer.

Skeins of raw silk, and balls of organzine.

1581 DE LA BEAUME, CHARLES, 20 *Rue de Courcelles, Paris*—Manufacturer. (Agent, M. DE FONTAINE MOREAU, 4 *South Street, Finsbury*.)

Stamping and registering machine for railways, post-offices, &c.

Threedometer, to reckon distances, specially adapted for vehicles.

Agricultural implements.

1582 DELACOUR, L. FELIX, 20 *Rue aux Fers, Paris*—Manufacturer.

Swords and sabres of various countries. Bronze and cast-iron articles: chandeliers, fire-irons, fenders, &c.

1583 DELAMORINIÈRE, GONIN, & MICHELET, 12 *Quai de Béthune (Ile St. Louis), Paris*—Manufacturers.

Satin barège dresses, mousseline-de-laine, Paris crape, &c. Long shawls. Fancy woollen and cotton fabrics.

1584 DELCAMBRE, A., 6 *Rue de Choiseul, Paris*—Manufacturer.

Piece of black silk lace. Black silk lace scarf. Fine gold and natural-coloured silk lace.

1585 DELONGUEIL, HYPOLITE, 8 *Rue Nationale St. Honoré, Paris*—Coachmaker.

Close calash, vazistas, mounted on springs, pincers' fashion, grey lining, painted blue, with silver plated ornaments.

1586 DEPOULLEY, CHARLES, 7 *Rue du Faubourg Poissonnière, Paris*—Manufacturer.

Dresses of various designs and fabrics. Various descriptions of silk handkerchiefs.

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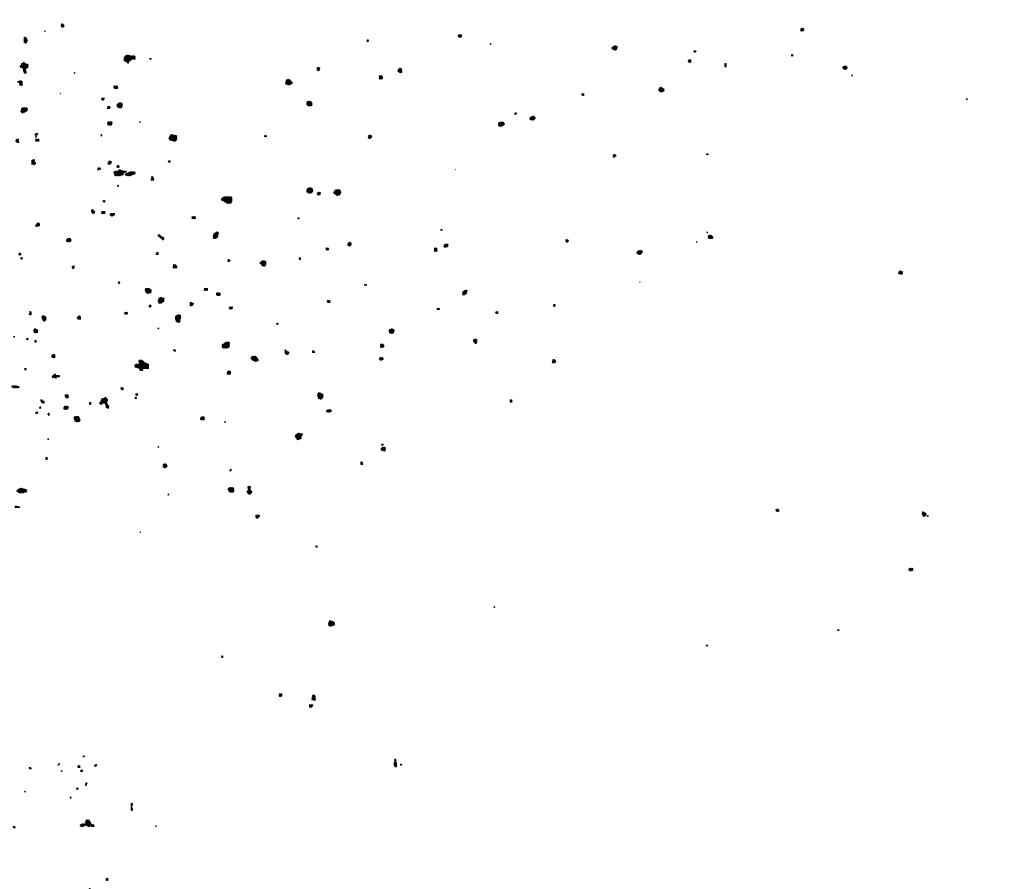
254.

VASE IN SILVER. M. J. DURAND, FRANCE.





CHARGED CUP AND CARVED SILVER. M. LYBUN, FRANCE.





182415.

1587 DESBORDES, —, 22 *Rue des Fossés du Temple*,
Paris—Manufacturer.

Scientific instruments:—Indicators of water levels, with plain glasses; manometers; barometer, &c.

1588 DESJARDINS-LIEUX, 4 *Passage St. Avoye*, *Paris*
—Manufacturer.

Specimens of medallions and vases. Small statuettes. Lamps, and embossed objects of all kinds.

1589 DETOUCHE & HOUDIN, 228 and 230 *Rue St. Martin*, *Paris*—Manufacturers.

Specimens of clocks; large and small regulators; chronometers and watches.

A small regulator, with a second dial, enclosed in a gilt brass case, with four glasses. The new escapement, invented by the exhibitors, is of constant action. It has the advantage over many others, of not disengaging the wheels until after the pendulum has received, by its contact with the small steel ball, the impulse which the latter gives it by its weight.

Another regulator, with free and constant escapement, by the application of a remontoir that acts upon the escapement wheel. It indicates the day of the month, the rising and setting of the sun, and the difference between true and mean time. In order to secure its regularity, its dials are put in action by means of wheels separated from those of the movement.

A regulator of large size, in a splendid brass case, in the style of Louis XV. The movement of this piece is exhibited for its execution and its compensator.

A large regulator in a gilt brass case, with glass front and sides. It indicates the seconds and the equation of time, and has an index for the month and the day of the month. Its pendulum, which is at the same time a compensator by means of levers, was invented by one of the exhibitors. This regulator is exhibited for accuracy and workmanship.

Several other movements, marking half seconds, and with a compensating pendulum; watches and chronometers made on the best principles; good travelling clocks, &c.

Ouranographical apparatus, by M. Guenal, which has been adopted by the city of Paris, by the Conservatory of Arts, and by several colleges. Manufactured only at the establishment of the exhibitors.

1590 DIGEON, —, 34 *Route d'Ivry*, near *Paris*—
Manufacturer.

Carbonate, nitrate, and sulphate of strontian. Sulphate of copper and ammoniac, &c.; phosphate, arseniate, muriate, oxalate, cyanide, chloride of copper; carbonate and sulphate of strontian; sulphate, nitrate, muriate, chlorate of barytes, &c.

1592 DUCHE, —, sen., & Co., 1 *Rue des Petits Pères*,
Paris—Manufacturers.

Long and square figured shawls of various kinds.

1593 DUMORTIER & Co., *Lyons (Rhône)*—Manufacturers.

Specimens of French wax candles.

1594 DUPES & Co., 21 *Rue Fontaine au Roi*, *Paris*—
Manufacturers.

Rods for curtains and apartments. Patented in France.

1595 DURAND, FRANCOIS, 41 *Rue du Bac*, *Paris*—
Goldsmith.

Tea-service, consisting of 17 pieces. Table centre-piece, accompanied with four crystal cups.

1596 DURAND, J., *Grenade (Haute-Garonne)*—
Manufacturer.

Vermicelli, glutinous preparations, and various other sorts of nutritious pastes.

A vase in silver with ornaments in relief. This vase is represented in the Plate 254.

A chased cup and salver, by Mr. Le Brun. These are represented in the Plate 252.

1597 ELOFFE, —, 10 *Rue de l'École de Médecine*, *Paris*—
Naturalist; and BOUBÉE, *Paris*—Professor of
Geology.

A collection of rocks, minerals, and fossils, arranged to facilitate the theoretical and practical study of the geological and mineralogical sciences.

A collection consisting of 125 specimens in agricultural geology, relating to soils, subsoils, and substances in use, or fitted for use, as manures.

A collection of 1500 specimens in geology, paleontology, and mineralogy, in boxes with compartments, arranged to facilitate comparison and reference. A similar collection of 1000 specimens applicable to agriculture and manufacture, arranged to facilitate the study of applied geology in colleges.

Synoptical table, being a general view of the materials of which the terrestrial globe is composed.

Two tables of geological epochs, presenting a general and select collection of the rocks, minerals, and organised beings which characterize the four geological epochs, designed particularly to extend the taste for the study of geology.

[The advantages of such collections and tabular statements, as are here shown, are extremely great; and no pains have been spared to place before the student in the government establishment of France all those aids which may best enable him to comprehend and apply science. As affording examples of approved methods of this kind, the present series deserves notice, although the views and statements of geological science illustrated will not always be found to agree with those generally admitted and acted on in this country. The collections agree with the authorized educational works of France.—D. T. A.]

1599 FAUSSEMAGNE, J. M., *Lyon (Rhône)*, and 8 *Rue du Bœuf*—
Manufacturer.

Specimens of isinglass.

1600 FELDTRAPPE BROTHERS, 144 *Rue du Faubourg St. Denis*, *Paris*—
Designers.

Specimens of engravings on cylinders, for printed and figured fabrics.

1601 FETU, JACQUES, 10 *Rue de Gravilliers*, *Paris*—
Manufacturer.

Chandeliers. Brackets. Candlesticks. Bed-room candlesticks. Candelabra. Clock. Inkstand. Statuettes.

1602 FOULQUES, HENRY, *St. Gaudens*—Manufacturer.

Specimens of white and gilt porcelain.

1603 FOULQUIE, Mlle., & Co., 20 *Rue Hauteville*,
Paris—Producers.

Collars, points, shawls, kerchiefs, and other articles of knitting-work.

1604 FOURQUEMIN & GODET, 25 *Rue Neuve des Bons Enfants*, *Paris*—
Designers.

Designs for shawls.

1605 FOURNEAUX, —, 64 and 70 *Galerie Vivienne*,
Paris—Organ Builder.

An organ.

1606 FRAIGNEAU, AUG., 114 and 115 *Palais National*,
Paris—Watchmaker.

Various watches, watch appendages, and alarms. Alarm clocks.

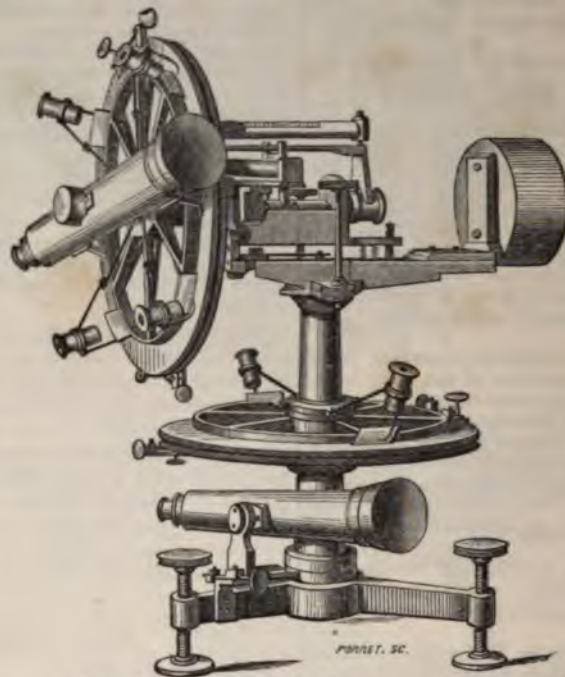
1607 FREY, jun., 2 *Impasse St. Laurent, Belleville*—
Engineers and Machine-makers.

A machine for nail-making, upon a new principle. This machine is of small size, and is adapted for the manufacture of nails from two-fifths of an inch to one inch and one-fifth in length. The exhibitor has in his establishment seven various machines of the same description, which manufacture nails from one-fifth of an inch to eight inches in length. These machines are made with a plain framing, and are very easy to be set and repaired. Exhibited for novelty, utility, and economy.

1608 FRINAULT, —, *Orleans (Loiret)*—Brassfounder.
Hermetic taps; a new invention for domestic use.

1609 FROMENT, GUSTAVE, 5 *Rue Ménilmontant, Paris*—
Manufacturer. (Agent, M. DE FONTAINE MORREAU, 4 *South Street, Finsbury*.)

Scientific instruments. Theodolite; and various models of electro-motive power. This theodolite is shown in the following cut.



Froment's Theodolite.

1610 GASPARD, P. A., 1 *Rue Madame, Paris*—
Engraver.
Frames containing engravings of religious subjects.

1611 GASTINNE, RENETTE, 29 *Allée d'Antin, Paris*—
Gunsmith.

Guns; carbines; pistols, in cases; small fancy pistol; self-loading pocket pistol, with cylindric-conical balls; unfinished gun-barrel; model of a machine for loading pistols, and for use as a measure.

1612 GAUVAIN, JEAN, 93 *Boulevard du Mont Parnasse, Paris*—Gunsmith.

Double-barrel fowling pieces, with engravings, &c.

1613 DE GEMINY, —, *Marseilles (Bouches du Rhône), 136 Rue de Paradis*—Manufacturer.

Cotton-seed oil, clarified and bleached.

1614 GIUDICELLI & DELABARRE, 254 *Rue Montmartre, Paris*—Mathematical Instrument Makers.

Universal rules, of various descriptions. A patented invention for precise measurements.

1615 GOCHT, FREDERICK, 10 *Rue des Marais St. Martin, Paris*—Cabinet-maker.

A lady's writing-desk, in Courbary wood, inside in rose-wood and grey maple.

1616 GRANGOIR, ERNEST, 28 *Rue de Bourgogne, Paris*—Manufacturer.

A satin fancy corset.

1617 GRIGNON, MEUSNIER, *Rue d'Orleans, Paris*—
Manufacturer.

Bronze clocks, candelabra, statuettes, &c.

1618 GROLLEAU & DEVILLE, 33 *Rue du Sentier, Paris*—
Manufacturers.

Dresses (Foulard pattern), barège, silk gauze, &c. Designs produced at the establishment of the exhibitors; printing executed by Messrs. Guillaume and Son, St. Denis (Seine).

1619 GUEYTON, A., 11 *Rue Chapon, Paris*—Jeweller.

Silver statue; The Prince of Wales in 1847.

Group in silver: The wild Horse and Slave.

Silver cup, exhibiting the ancient, mediæval, and modern race-course; the education of Achilles; and wild horses.

Cups; hunting scenes, bull-fight, and etching.

Ornamental boxes, in renaissance, mixed Gothic, mediæval, and other styles. Nosegays and pastil-burners.

Pictures: French and Dutch festivals, and scenes in Syria.

Sabres and swords, in ornamented steel, precious stones, &c. Sabre presented to Col. M. Guinard by the Parisian Legion of Honour. Fancy sabres and swords. Freemason's swords.

Hunting-knives, ornamented with precious stones, antique heads, &c.: subjects—"Hunter and Fox," "Page Asleep," "Hunting Emblems."

Silver daggers, with etchings. Silver bracelets, with designs: "Arabian Camp," "Hunting emblems."

Silver snuff-boxes, with etchings and designs: "Shir-

wreck of the Medusa," "Prayer in the Wilderness," "Lion in Shield," "Stags," &c.

Ornamented casolette and bonbonnières. Seals, with various designs: "Truth," "Two Children supporting the World," &c.

Chatelaines, cigar-holders, and purses. Rings, with various devices. Ornamented brooches, sticks, whips, and portfolios. Galvano-plastic plates, &c.

1620 GUIMET, JEAN-BAPTISTE, *Lyon (Rhône)*—
Manufacturer.

Specimens of ultramarine blue, applicable to manufacturing purposes and the fine arts.

1621 HEBERT & SON, 13 *Rue du Mail, Paris*—
Manufacturers.

Long and square Cashmere shawls, of pure wool; various grounds.

1622 HENRY, FREDERIC, 8 *Rue de Limoges, Paris*—
Manufacturer.

Articles in embossed steel, including desk-seals, purses, pocket-books, ladies' jewellery cases, statuettes, and Parisian fancy work.

1623 HENNEQUIN, —, 17 *Rue Chapon, Paris*—
Manufacturer.

Specimens of a new species of jewel-casket, called "Colombe," for holding brooches and bracelets. This casket is made in the form of a beautiful bird, and shows the jewellery in an advantageous manner. Other specimens of jewel-caskets.

1624 HERVE BROTHERS, 127 *Chemin de Charenton—Bercy*—
Manufacturer.

Specimens of gelatine and glue.

1625 HOOPER, GEORGE, 6 *Rue des Fossés Montmartre, Paris. Manufactory, Rossein (Aisne) and Lyon (Rhône)*—
Manufacturer.

Neckerchiefs and mittens in lace. Shawls, dresses of various patterns, and embroidered and printed novelties.

1626 HOUSSARD, EUGENE FRANCIS, *Persan (Seine and Oise), and Rue St. Honoré, Paris*—
Manufacturer.

French vermicelli and other pastes, moulded in various forms.

1627 HOUBIGANT, CHARDIN, 19 *Rue de Faubourg, St. Honoré, Paris, and Regent Street, London*—
Glovers.

A great variety of pairs of gloves, made of skins matched in colour and quality.

1628 HOULLIER, BLANCHARD, 36 *Rue de Cléry, Paris*—
Gunsmith.

A brace of pistols, inlaid with gold and platina, and carved; enclosed in an ornamental case. A pair of double guns, with various improvements.

Two fowling-pieces, of which the barrels are lined in their entire length with a tube of platina without solder. These barrels, of which the range is at least equal to the range of any new gun, will remain in the same condition for an indefinite period, platina being unalterable by oxidation, a process by which the interior of the iron guns is soon injured.

1629 JACOB, PETIT, 32 *Rue de Bondy, Paris*—
Manufacturer.

A fountain in ornamental porcelain. Porcelain biscuits, designs for patterns.

1630 JOUHANNEAUD & DUBOIS, 5 *Rue de l'Entrepôt, Paris*—
Manufacturers.

Vases, decanters, clocks, scent-bottles, tête-à-têtes, &c. Specimens of porcelain of different colours, of Sèvres blue

china, and articles in imitation of the Chinese and Javanese productions. Various articles of an ornamental kind for lamps, &c.

1631 JOURDAIN, XAVIER, *Altkirch (Haut-Rhin)*—
Manufacturer.

Specimens of various fabrics, jaconets, organzins, muslins, &c.

1632 KERCHER & WESTERMANN, *Metz (Moselle)*—
Manufacturers.

Articles in stamped iron, tinned or varnished.

1633 KLEINJASPER, J. F., 296 *Rue St. Honoré, Paris*—
Pianoforte Maker.

A cottage pianoforte.

1634 KOECKLIN BROTHERS, *Mulhouse (Haut-Rhin)*—
Manufacturers.

Chintzes, printed cambrics, barèges, woollen, and half-woollen stuffs, &c.

1635 LAASS D'AGUEN, VICTOR, Inspector at the National Institution of the Juvenile Blind, *Paris*.

Geographical maps, in relieve, and writing boards, for the use of the blind, a new invention; metallic plates for a new system of printing.

1636 LACROIX BROTHERS, *Angoulême (Charente)*—
Manufacturers.

Various sorts of stained and ornamental papers.

1637 LAIGNEL, JEAN-BAPTISTE, 13 *Rue de la Harpe, Paris*—
Engineer.

A model of drags and breaks. This invention has been adopted in Belgium, Prussia, and for the inclined planes of Liege and Aix la Chapelle, where it has been employed successfully on several occasions where accidents have occurred by the ropes breaking.

1638 LAMBERT, SAMUEL, 34 *Rue Verte, Paris*.

Two spheres of silvered crystal; two crystal vases, silvered; and several similar articles.

1639 LANDRON BROTHERS, *Meung-sur-Loire (Loiret)*—
Tanners.

Leather made from the skins of different animals, natives of France and of Buenos Ayres.

1640 LAUGIER, —, *Ongle (Basses Alpes)*—
Producer.

Samples of honey and wax.

1641 LANNE, ETIENNE, 130 *Rue du Temple, Paris*—
Cutler.

Scissors, knives, pen-cutters and other articles of cutlery. Table cutlery, razors, and razor-strops.

1642 LAPEYRE, ROB, & Co., 112 *Rue de Charenton*—
Manufacturer.

Specimens of stained paper, &c.

1643 LATELETIN & PAYEN, *Place St. Nicholas des Champs, Paris*—
Manufacturer.

Bracelets, brooches, seals, trinkets, and various articles of jewellery.

1644 LECOCQ, HYPPOLITE, *Rue des Frans-Bourgeois, Au Marais*—
Manufacturer.

Frames of ornaments in stamped brass. Hot-air stoves, and various apparatus for warming houses. Heating apparatus, without pipes, which may be moved from room to room, and placed without danger on boards or carpets, the stand being kept constantly cool by the ventilation produced by the apparatus. After being lighted in the morning, it will burn for 12 or 15 hours, without requiring fresh fuel.

- 1645 LEDUC, CHARLES, *Nantes (Loire-Inférieure)*—
Rope Maker.
Specimens of fishing-rods, lines, and nets. Ship ropes.
- 1646 LEFÈBRE, AUG., *Bayeux, (Calvados), and Rue de Cléry, Paris*—Manufacturer.
Thread lace counterpane. Alençon lace scarf and lappets. Shawl, point scarf, veil, and black silk lace flounces. Black silk blond mantles, for Spain and Mexico.
- 1647 LEFÈVRE, B., 109 *Rue Montmartre, Paris*—
Manufacturer.
Various kinds of varnish for the arts, buildings, carriages, &c.
- 1648 LEFÈVRE, —, 40 *Rue Fontaine au Roi, Cité Holbacher, Paris*—Manufacturer.
Cash-boxes, cigar-cases, and other articles produced by the galvano-plastic process. Patented in England.
- 1649 LEMIRE & SON, 1 *Rue des Feuillants, Lyon (Rhône)*—Manufacturers.
Silk stuffs for furniture and church ornaments. Velvets, damasks, brocade, &c.
- 1650 LEROLLE BROTHERS, 1 *Chaussée des Minimes, Paris*—Manufacturers.
Bronzes, clocks, candelabra, chandeliers, statuettes, &c.
- 1650A LEON, LALAUNE, 18 *Rue de Fleurus, Paris*—
Civil Engineer.
A calculating rule with sliding rule. An abacus, or universal arithmetician, and a tableau, by which by an easy combination of straight lines and figures, calculations can be made nearly as correct as by the sliding rule.
- 1650B LANGLADE, —, *Paris*—Inventor and
Manufacturer.
Varnished cloth; invented by the exhibitor. Patented.
- 1651 LIÉGARD, H., 19 *Val St. Catherine, Paris*—
Saddler.
Framed designs, representing specimens of saddles, and articles of military accoutrements.
- 1652 LORTIC, P. M., 199 *Rue St Honoré, Paris*—
Bookbinder.
Various publications. Specimens of fancy bookbinding.
- 1653 MABRUN, PAUL, 21 *Place des Vosges, Paris*—
Manufacturer.
A large geographical and hydrographical map of France. Two chronological tables of the histories of France and England.
Four great pictures of the Four Evangelists.
- 1654 MAGNIN, JEAN MARIE, *Villefranche (Rhône)*
—Inventor.
Sewing, embroidering, and cord-making machine, called Cousobrodeur, a new invention, patented in England. Samples of sewing on different stuffs.
[This machine, which is in the form of a chiffonier or work-table, three feet high, is furnished with a pedal and surmounted with a box in gilt bronze, which contains the principal machinery. The workman seated before it, sets it in motion by means of a pedal, while with his hands he guides at will, horizontally, a piece of stuff either single or double. Each stroke of the pedal causes a crotchet hook to pass through the stuff, and forms a series of stitches equally adapted for sewing or embroidery. A screw enables the workman to vary, with great accuracy, the size of the points of embroidery; and by the same means the sewing may be slackened or tightened at will. By a series of tubes of different sizes, the number of the needles may be changed, so that the same machine may be used for
- the manufacture of almost every kind of needlework at the rate of 250 stitches a minute. When used for embroidery, the needle of the machine, turning by means of a second pedal moved by the left foot, enables the workman to execute all sorts of patterns on the coarsest as well as the finest stuffs.]
- 1655 MALLET & Co., 261 and 263 *Rue St. Denis, Paris*—Manufacturers.
Specimens of feathers and flowers of all kinds, for mourning and second mourning.
- 1656 MAYER & Co., 64 *Rue du Marais, St. Martin*—
Producers.
A vase, imitation porcelain, in gilt bronze, and other articles, painted and decorated.
- 1657 MENET, JEAN, *Boulieu and Annonay (Ardèche)*—
Producer.
Yellow and white organzines, of different qualities and preparation. Yellow and white wool; skeins of yellow and white spun raw silk.
- 1658 MERCIER, CLAUDE VICTOR, 28 *Rue de Gravilliers, Paris*—Manufacturer.
Snuff-boxes in tortoiseshell, wood, and ivory, rhinoceros, palm and olive-tree wood, rosewood, &c.
- 1659 MEURANT BROTHERS, & WILLEMAIN, *Charleville (Ardennes)*. Dépôt, 73 *Faubourg St. Martin*
—Machine Makers.
A press, with an iron bucket and zinc basin. A press of a different model.
- 1660 MICHEL, PASCAL, 27 *Quai d'Anjou, Ile St. Louis, Paris*—Sculptor.
Marble groups of three figures. A Carthusian monk, plaster cast.
- 1661 MITTELETTE, VICTOR, *Soissons (Seine and Oise)*—
Engineer.
Thrashing machines; winnowing machines.
- 1664 MONET, —, 32 *Rue Meslay, Paris*—
Manufacturer.
Chronometers, indicating the days of the week, month, and year, &c.
- 1665 MONTAL, CLAUDE, 5 *Boulevard Montmartre, Paris*—Musical Instrument Maker.
Three cottage pianofortes.
- 1666 MOREL, FRÈRES, *Charleville (Ardennes)*—
Manufacturers.
Moulded cast-ironware; projectiles. Wrought-iron nails. Specimens of ironmongery, &c.
- 1667 MOUCHET, —, *Petit Montrouge (Seine)*—
Manufacturer.
A model of a machine for kneading bread. There are ten of these machines in full operation.
- 1668 MOURCEAU, H., 27 *Rue du Mail, Paris*—
Manufacturer.
Fabrics for furniture, folding-doors, window-curtains, and table-covers. Manufactured of wool, silk and wool, and silk, in imitation of the Aubusson and Gobel tapestries.
- 1669 NOEL, —, 16 *Rue du Ponceau, Paris*—
Manufacturer.
Specimens of gilt and oxidised silver eye-glass chains, neck-chains, leontines, watch appendages, and cornelian seals.
- 1670 NOURRY BROTHERS, & MEYNARD, *Lyon (Rhône)*—Manufacturers.
Specimens of silk handkerchiefs, corahs, white damasks, &c.

- 1671 ODIOT, —, 26 *Rue Basse du Rempart, Paris*—
Jeweller.
Specimens of table services in various styles, tea services, and other articles of silversmiths' work.
- 1673 PARISSET, FRANÇOIS, 192 *Quai Jemmapes, Paris*.—
Manufacturer.
Specimens of burners for gas-lights. A regulating apparatus for the pressure of the gas.
- 1674 PAYEN, ADRIEN-ROMAIN, 18 *Boulevard St. Denis, Paris*—Manufacturers.
Specimens of gold jewellery: twelve sets of jewels, each representing the peculiar style and taste of a nation—the argolian for the Mexican, the coquette for La Martinique, &c. Filigree work, in plain or polished gold, pearls, &c.
- 1675 PEPIN-VEILLARD, *Orleans (Loiret)*, and 14 *Faubourg de la Madeleine, Paris*—Manufacturer.
Samples of woollen blankets.
- 1676 PEYROULX, HIPPOLYTE, *Gouzon, Canton de Jarnages (Creuze)*—Manufacturer.
Specimen of smalt or pure cobalt blue.
Two vases of porcelain de Sèvres, coloured with smalt blue.
- 1677 POYET, —, *Paris*, and 201 *Piccadilly*—Artist.
Two pictures in crayon, in a new style.
- 1678 PIVER, ALPHONSE, 103 *Rue St. Martin, Paris*—
Manufacturer.
Various kinds of soap, manufactured with the scents of flowers, without the aid of essential oils; perfumed oils and essences; almond cream soap for shaving. Smelling-bottles and dressing-cases. At the manufactory in Grasse (var), and the establishment at Paris, the exhibitor employs annually 80,000 lbs. of petals of orange-flowers, 54,000 lbs. of rose-leaves, 32,000 lbs. of jessamine, 32,000 lbs. of violet, 20,000 lbs. of tubereuse, 16,000 lbs. of mignonette, and 16,000 lbs. of lilac.
- 1679 PLAGNIOL, —, 5 *Rue Pastourelle, Paris*—
Optician.
A variety of spectacles. Ivory and polished opera glasses. Daguerreotype pictures.
- 1680 POULET, JACQUES FREDERIC, 12 *Rue Pierre Levée, Paris*—Manufacturer.
Lead wire, for horticulture, to replace rush, osier, and every kind of fastening now in use; it does not oxidate, and favours the growth of plants. Zinc labels and links.
- 1681 PRELAT, —, 41 *Rue de la Ferme, Paris*—
Gunsmith.
Brace of pistols, with carved and chased gold mountings. Five-barrelled pistols, charges fired separately. Engraved and carved double-barrelled gun, charged at the stock, &c. The first percussion guns were manufactured in the exhibitor's workshops.
- 1682 PRAT, A., & AGARD, F., *Aix (Bouches du Rhône)*—
Producers.
Specimens of marine salts; salt in large crystals, the result of natural crystallisation; minute crystals obtained from saline solutions by means of chloride of magnesia.
- 1683 QUENNESSEN, —, 4 *Rue du Bouloi, Paris*—
Platina Refiner.
Platina crucibles, capsules, and various other chemical apparatus in platina. Apparatus of platina for the concentration of sulphuric acid, with syphon, the tubes of which are made without being soldered. Apparatus of platina for refining gold and silver; palladium and iridium for the nibs of gold pens.
- 1684 RANDON, L., *Caën (Calvados)*, and 9 *Passage des Petits Pères, Paris*—Manufacturer.
Specimens of white silk blondes; scarf, overall, head-dress, &c. Large gold and silk lappets.
- 1685 RIEUSSEC, N., *Avenue du Bel Air, St. Maude, near Paris*—Manufacturer.
Specimens of chronometers and watches.
- 1686 RIGAULT, jun., *Orléans (Loiret)*—Manufacturer.
Samples of vinegar.
- 1687 ROLLER & BLANCHET, 26 *Rue Hauteville, Paris*—
Manufacturers.
Four pianofortes of different descriptions.
- 1688 ROSSWAG, A., & SON, *Schelestadt, (Bas-Rhin); Lyon (Rhône)* and 321 *Rue St. Denis, Paris*—
Paper Manufacturers.
A cylinder for making continued laid paper.
Metallic cloths and gauzes. These gauzes are intended to permit the ready percolation of the superfluous water from the pulp, as it is passing along the machine.
- 1689 ROUCOU, J., *Belleville (Seine)*, and 21 *Rue de Paris*—Manufacturer.
Daggers, trophies, hangers, &c., with reproduction of ancient frosted work, inlaid work, and filigree.
- 1690 ROUX, F. M., *St. Chamond (Loire)*—
Manufacturer.
Silk trimmings and lacings of various kinds.
- 1691 SAYE, P. G., 9 *Rue du Parc-Royal, Paris*—
Manufacturer.
Bronze clocks, statuettes, inkstands, and caskets.
- 1693 SEGUIN, —, 22 *Rue d'Assas, Paris*—Marble Cutter.
Samples of different marbles.
Marble statuettes and statues, representing various incidents in the life of Napoleon. Quartz paper-presser.
[Of the samples of marbles here exhibited—most of which are obtained from French quarries—some are of great beauty, and deserve careful notice. The material of which the statuettes are made is particularly good, and large slabs of it have been obtained.—D. T. A.]
- 1697 SIMON, S., *Lyon (Rhône)*—Manufacturer.
Specimens of japanned calf leather.
- 1698 SOUCIN, C., *Chaumont (Haute-Marne)*—Tanner.
Specimens of dressed calf-hides.
- 1699 SOUFLETE, 171 *Rue Montmartre, Paris*—
Manufacturer.
A grand pianoforte. Two cottage pianofortes.
- 1700 SUCHET, J. D., 3 *Rue St. Catherine, Lyon (Rhône)*—Manufacturer.
Corsets without seams.
- 1701 THOLLEN, —, *Grenoble (Isère)*—Manufacturer.
Specimens of various essences and perfumed liquids.
- 1702 THOURET, F. A., 31 *Place de la Bourse, Paris*—
Silversmith.
Specimens of plated and electro-plated silver-work, manufactured by a process, patented in France and England.
- 1703 TROUPEAU, C. M., 4 *Rue Grange Batavière, Paris*, and *Upper Charlotte Street, Fitzroy Square*—
Optician.
Patent diurnal reflectors. An apparatus for reflecting light and lighting up dark rooms, counting-houses,

kitchens, workshops, cellars, tunnels, ships, passages, staircases, and all places which have only borrowed and insufficient light. The reflector may also be made use of with advantage for lamps or gas burners.

1704 VATIN, —, jun., & Co., 13 *Rue de Cléry, Paris*—Manufacturers.
Specimens of fancy gauze, and woollen and silk fabrics.

1705 VERSTAEN, L. N., 6 *Rue Beaujolais, Paris*—Samples of strong boxes or safes.

1706 VIDECOQ & SIMON, 35 *Rue des Jeûneurs, Paris*—Manufacturers.
Chantilly black lace shawls. Veils, lappets, and set of Alençon point lace.

1707 VILLEMESENS, —, 57 *Rue St. Avoye, Paris*—Manufacturer.

Bronze candelabra, groups, lamps, &c. Gothic branch candelabra; Gothic stand for large candelabrum, renaissance style; gilt bronze ewer, Florentine style; three groups in gilt and silvered bronze; lions and tigers fighting, &c.

1708 GUILLOT, —, jun., 17 *Rue du Bouloi, Paris*—Manufacturer.

Specimens of Bourdeaux calf leather, and boot fronts.

1709 BARBEDIENNE & Co., 30 *Boulevard Poissonnière, Paris*—Producers. (Agents, MUNRO, JACKSON, & GRAHAM, 37 and 38 *Oxford Street, London*.)

Sculpture obtained in reduced proportions, by mechanical processes, A. Collas, inventor; bronzes of art; gates of the Baptistery at Florence, half the size of the original.

Bookcase in ebony and bronze, with select subjects from the works of Ghiberti and De Michelonge; executed by Clesinger, sculptor.

1710 LAPEYRIÈRE, —, IRON WORKS AT BRUNIQUEL (*Turn-et-Garonne*). (Represented by Mons. DÉTAPE, *Paris*.)

Bars of charcoal iron, made for conversion into steel, and specimens for other purposes, after being subjected to torsion, punching, &c. Files and horse-rasps made from steel manufactured from this iron by Messrs. Ibbetson Brothers, Sheffield.

1711 MARTIN, LOUIS PIERRE ALEXANDER, 13 *Rue Fontaine au Roi, Paris*—Inventor and Manufacturer.

Percussion organ with expression. The instrument contains all the latest improvements that have been made in the harmonicon.

1712 DUCLOS, JULES, 47 *Rue Richelieu, Paris*—Gunsmith.

Specimens of guns and pistols. Gun with carved ebony butt end; barrels welded with copper, richly engraved, inlaid with gold and silver, on a new system. The barrels manufactured by M. Leopold Bernard.

1713 PAILLARD, ALEXANDRE VICTOR, 8 *Rue St. Claude, au Marais, Paris*—Manufacturer.

Bronzes, clocks, candelabra, &c. Clock in bronze on a marble base, subject—Daphnis and Chloé; clock in the style of Elizabeth: two statuettes in bronze—d'Aguesseau and L'Hôpital; pair of vases in porcelain; group in bronze—boys wrestling.

1714 GENOUX, FRANCOIS, 236 *Rue du Faubourg St. Antoine, Paris*—Manufacturer.

Samples of stained paper.

1715 DELICOURT, ETIENNE, 157 *Rue de Charenton, Paris*—Manufacturer.

Seven pannels of stained papers; rolls of stained paper; and a book for showing the contrast of colours.

1717 DE BASTARD, COUNT AUGUSTE, 95 *Rue St. Dominique, Paris*—Producer. (Agent in London, C. DE COSSON, 26 *Percy Street, Rathbone Place*.)

Collection of writings, paintings, and ornaments of the illuminated French manuscripts, from the time of Clovis to the accession of the Bourbons. Greek-Byzantine paintings, from the ninth to the fourteenth century. German paintings, from the tenth to the thirteenth century. Roman, Merovingian, Carolingian, Lombardic, and Saxon writings of the fifth, sixth, seventh, eighth, and ninth centuries. Carolingian, Caputian, and German paintings of the eighth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, and sixteenth centuries. The expense of the publication of this unique work has amounted to 80,000*l.* sterling. It was undertaken by the exhibitor to elucidate the history of art in Greece, France, and Germany, during the early period when paintings were only found in manuscripts.

1718 DOCAGNE, S., 3 *Rue de Grammont, Paris*—Manufacturer.

Point d'Alençon lace.

1719 ALEXANDRE & SON, 39 *Rue Meslay, Paris*—Manufacturers.

Two melodium organs. Organ on a new principle.

1720 FROMENT-MEURICE, 52 *Rue St. Honoré, Paris*—Manufacturer.

Silver-gilt toilet, beautifully chased, and ornamented with precious stones; presented by subscription, on the occasion of the marriage of H.R.H. Louise Maria Thérèse of France, and H.R.H. Charles Ferdinand de Bourbon, Infanta of Spain, executed under the superintendance of M. Duban.

Chased iron casket, the property of the Comte de Paris. This curious casket is of cast-iron, each ornament executed separately on the forge by the limner and the chaser.

Gothic chalice, executed in gold, silver, and enamel. The six scriptural paintings in enamel, were executed under the direction of the Abbé Combalot.

A silver vase, presented by the Hospital of Paris to Lieutenant-General Baron Feuchères. The portrait of the General, in sculptured malachite, was executed by N. Pradier, the handles represent two figures, Benevolence and War.

Silver testimonial presented to M. Emmery, engineer, by the city of Paris. The sculpture and chasing by M. Klagmann. The plate 261 represents this object. An ecclesiastical vessel, gilt and enamelled. A sword, presented to General Cavaignac, by the inhabitants of Lot. A shield in silver and iron, presented as a prize at the races of Chantilly, by the President of the Republic. A sword, presented to General Changarnier, by the workmen of Montluçon and Commeny. The ornamental hilt of this weapon, with two others, is represented in the adjoining plate 228. A vermilion cup, ornamented with precious stones: subject, "French Comedy." Various cups and articles of jewellery. Diamond and enamelled bouquets. Bouquets composed entirely of diamonds. Jewellery in the Moorish, Byzantine, and Renaissance style, &c.

A carved ivory tankard. This object is shown in the adjoining plate 248.

1721 FESTUGIÈRE, EUGENE JEAN, & Co., *Aux Eyzies, Canton de Tayac (Dordogne)*—Manufacturers.

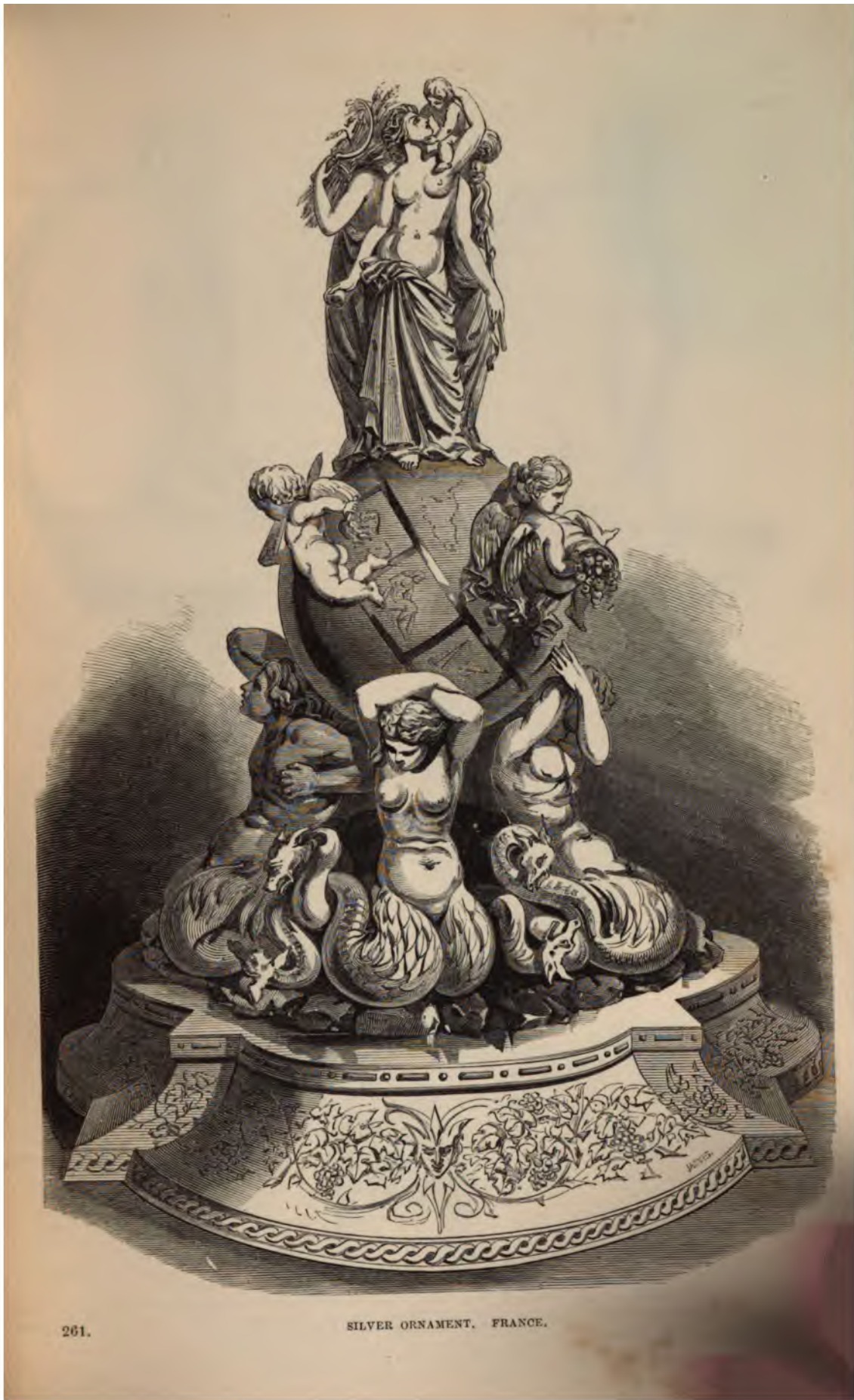
Samples of cast and wrought iron.

1722 GODEFROY, —, 14 *Cité Trevisé, Paris*—Producer.

Album of the society of literary men. Collection of drawings and autographs.

1724 LAGRÈZE, —, 8 *Rue Michel-le-Comte, Paris*—Manufacturer.

Specimens of guns: hunting-guns, single and double pistols, pocket-pistols, &c.



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SWORD OF
GENERAL CHANGARNIER.



SWORD OF
GENERAL CAVAIGNAC.



HUNTING KNIFE. FRANCE.

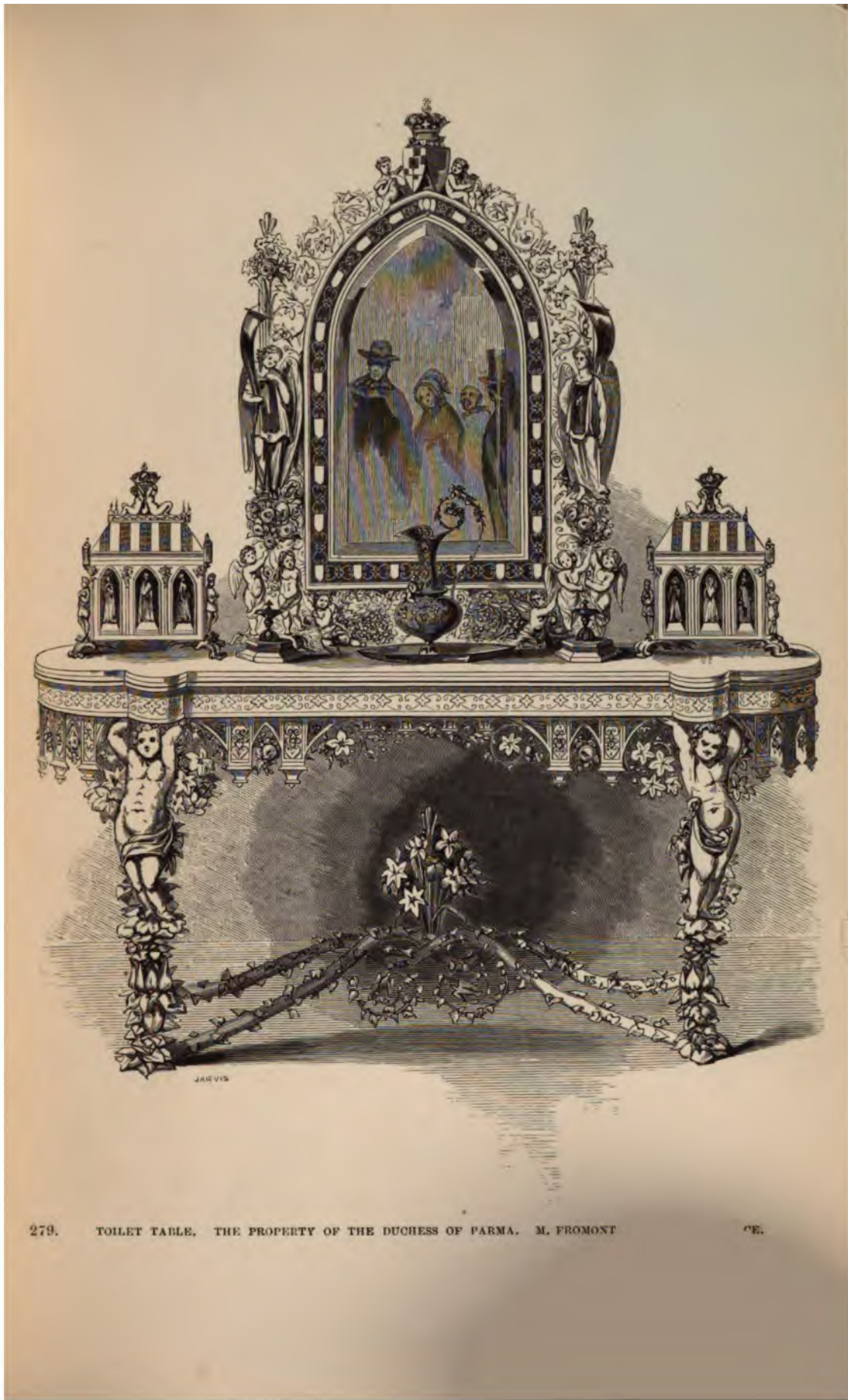


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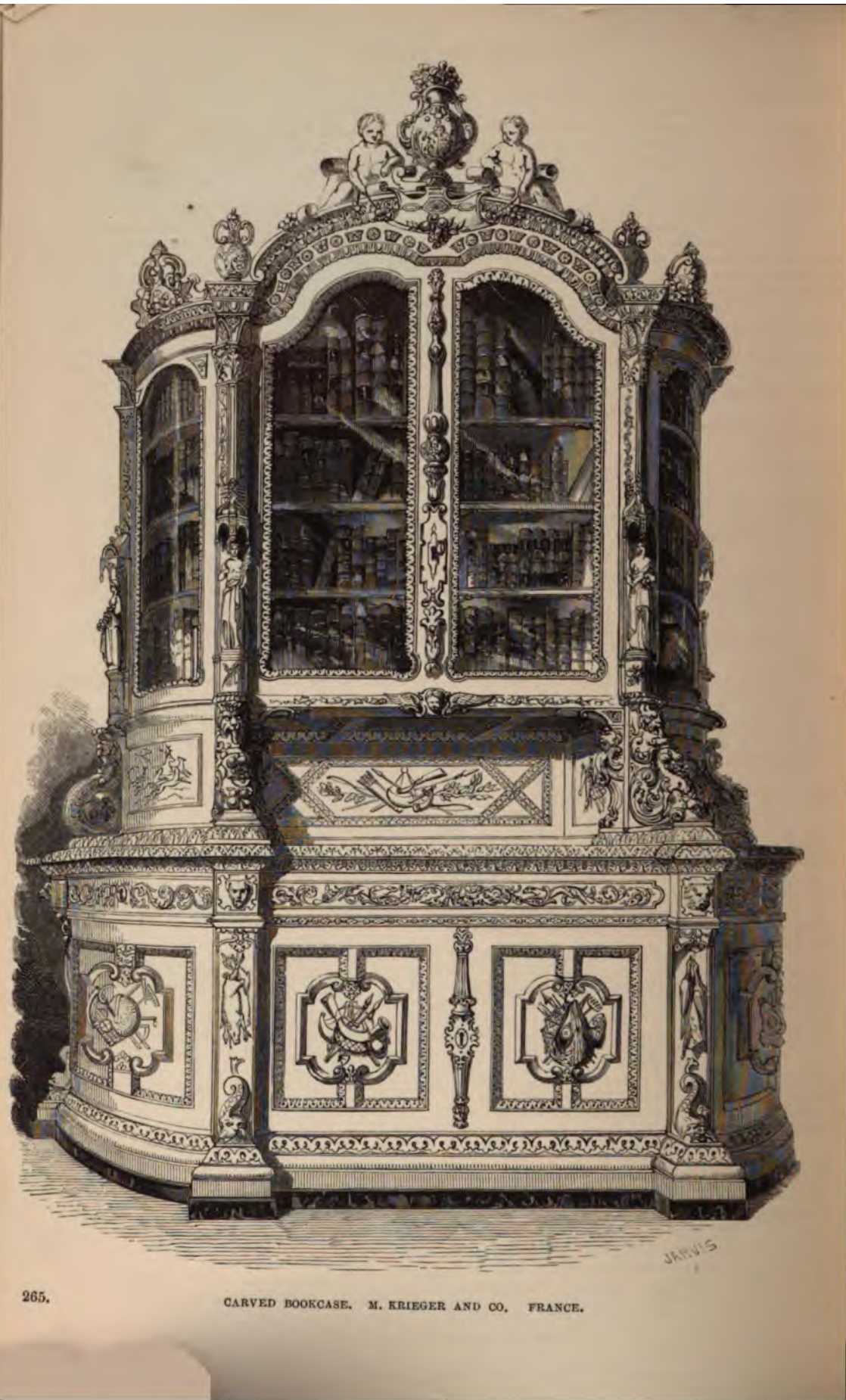




279. TOILET TABLE, THE PROPERTY OF THE DUCHESS OF PARMA. M. FROMONT

CE.





1725 SAX, ADOLPHE, & Co., 50 *Rue St. Georges*,
Paris—Manufacturers.

Musical instruments, made of brass and wood. Saxophone, and complete set of instruments for military bands, invented by the exhibitor, and adopted by the French government for the army.

1726 MORGANT, EUGENE, *Guines (Pas de Calais)*—
Manufacturer.

Two transparent water-proof window-blinds. These blinds are not affected by the light, or by alterations of temperature, or atmospheric changes, and remain unaltered for any length of time.

1727 RASTOUIN, VINCENT, *Blois (Loire et Cher)*—
Carriage Maker.

Specimens of carriage axle, and nave boxes.

1728 LEMSEIGNE, LOUIS, 72 *Rue St. Jacques, Paris*—
Manufacturer.

Specimens of engines, apparatus, mathematical instruments, tools, &c.

1729 CHEVALIER, CHARLES, 158 *Palais National*,
Paris—Optician.

Magnifying glasses; improved camera lucida; photographic apparatus, with compound glasses; magnifying opera glasses; improved telescopes, photographic impressions.

1730 BOURDIN, CONDEIEUX, *Rhône*—Producer.

Specimens of dyed thrown silk.

1734 MOREL, BROTHERS, *Charleville (Ardennes)*—
Manufacturers.

Specimens of cast-iron; earthenware; projectiles; nails made by machinery; enamelled earthenware; cut hardware; rifle guns.

1735 GRANGER, J. M. F. L., 22 *Rue St. Appoline*—
Manufacturer.

Specimens of hardware: locks of all kinds, padlocks.

1736 COLIN, JOSEPH, 9 *Rue des Sulerges, Nantes*—
Manufacturer. (Agent, A. Chauffourier, 9
Sackville Street, Piccadilly.)

Specimens of preserved food and pickles, game, fresh meat, vegetables, fruits, &c.

1737 GOLDENBERG, GUSTAVE, & Co., *Zornhoff, near*
Savern (Bas-Rhin)—Manufacturers.

An assortment of hardware, edge-tools, flattened saws, files, steel, &c.

1738 ZIPELINS, G. & FUCHS, *Mülhausen*—Designers.

Design for a portiere, executed by Roussel, Requillart, and Choquel.

1739 GREGOIRE, FRANCOIS, *Houbourdin, near Lille*
(Nord)—Manufacturer. Agent Mr. C. SERIN,
11 *Catherine Street, City*.

Three bottles of spirit of molasses, and vinegar from corn; the former now for the first time so distilled as to be available as a beverage, and used in the manufacture of alcoholic preparations, &c.

1740 MALLET & BAILLY, *Rue de Rambuteau, Paris*—
Artificial Florists.

Glass case, containing an artificial tree, representing the "weeping willow," and other emblems of mourning.

1741 KRIEGER & Co., *Paris*—Manufacturers.

Various articles of ornamental furniture.
A richly carved book-case. This book-case is represented in the annexed Plate.



Represented by Mr. EDMUND BOUVY, Commissioner of Commercial Affairs for the Colony, and Delegate of the FRENCH MINISTER OF WAR to the LONDON EXHIBITION.

FROM this country an interesting group of objects, chiefly of raw materials and produce, is exhibited. Its natural resources are only just beginning to be opened up; and the promise of these, as may be in a degree estimated by the objects exhibited, is already important. The mineral wealth of this country would seem to be considerable, and when thoroughly rendered available, may prove a fertile source of prosperity. The copper, lead, and other ores shown, indicate a promising field for mining operations. A large quantity of grey copper ore appears to be on the point of exportation to England—probably to Swansea, for the purpose of being smelted. Some vegetable productions of interest and possible future value as textile materials, are shown in this collection. Medicinal substances and agricultural products are also fairly represented. A few textile productions and miscellaneous objects are likewise shown. The 'burnouses' of camels' hair will attract notice.—R.E.

1 ANDRE, —, Director of the Tobacco Service,
Algiers.

Tobacco, in leaves, from the settlers of Sahel and Mitidja, and the natives of those districts.

Scaferlati tobacco.

Cigars made of Krachena tobacco.

2 ARNAUD, —, *Bone (Constantine)*—Manufacturer.

Samples of white soap.

3 AVERSENG & Co., *Toulouse*—Manufacturers.

"Vegetable hair," made of the leaves of the Algerian dwarf palm-tree, and adapted for the use of upholsterers, coachmakers, and other trades using the common horse-hair. Patented for Algiers and France.

4 BEAUREGARD, —, *Philippeville (Constantine)*.

Iron ore of Mount Filfilah.

5 BEDEL, *Arzew (Oran)*—Grantee.

Crystallized salt from the Salt Lake of Arzen, containing very considerable quantities of this produce, which is easily worked.

6 BENES, Miss M., *Philippeville (Constantine)*.

White cotton, called Naples cotton, gathered in 1850.

7 BEN ZEKRI (the wife of the Caïd), *Constantine*.

A silk and woollen haïck.

8 BERNARDON, H. A., a Soldier under confinement
in the Military Prison of Bone (*Constantine*).

Aloes thread cloak, entirely the exhibitor's own workmanship.

9 BORDE, J., *Philippeville (Constantine)*—
Manufacturer.

Fine oil of olives, crop 1850.

10 BOULANGER, *Pierre Honoré*—Saddler.

Crapeau saddle, full quilted leather saddle-bow.

Bauche saddle, leather saddle-bow.
Short-ride saddle, saddle-bow, wooden band.
Child's saddle; a full-quilted velvet.
A bit upon a new principle.

11 BRIQUELER and Co., *Tenez*—Lesscees.

Samples of copper pyrites from the Oued Allelah mines.

12 CABANILLAS, WIDOW, *Saw-mill Works, Algiers*.

Five specimens of veneering, adapted for cabinet-work.

13 CAILLIEZ, A. L. J., *Mustapha*—Cabinet-maker.

A toilet-table, and inlaid work-table, made of native wood.

14 CANTON, —, President of the Chamber of Commerce, *Algiers*—Merchant.

Samples of Boucada and Medeah raw wool.
Three samples of Upper Chilif wool combed by machinery.

15 CASTEIRAN, —, Colonist of the St. Louis Agricultural Colony (*Oran*).

Boiled yellow silk and white silk handkerchiefs, made of silks grown by the exhibitor in 1850.

16 CHAPEL, —, *Kouba*.

Farina from the canna-root (*Canna discolor*), a new article of food.

17 CHUFFAUT, —, *Birmandreia*—Agriculturist.

Hard and soft wheats, crop 1850.
Cotton, called Louisiana, crop 1850.
Silk in cocoons, and spun silk.

18 COMMISSION OF THE MOUZAIK MINES.

Crystallized grey copper ores. The Company is about to send over to England 2,000 tons of this ore, which are intended for smelting, and will probably be followed by more.

Sample of copper after the first smelting, produced from the ores of Mouzala, and sulphate of copper and sulphate of iron, the product of the same ores, in the factory of Caronte, near Marseille.

[In the case of English ores of other metals, it is the common practice, in order to save the expense of carriage, to smelt them close to the spot where they are raised. Copper ores, however, are generally raised in places where fuel is scarce. Swansea possesses abundance of coal, and a commodious and safe harbour; so that the ores of the numerous mines of Cornwall, Devonshire, Wales, Ireland, and the Isle of Man, can be sent at a very easy rate to Swansea to be smelted; and the vessels which convey the ore return ballasted with Welsh coal, for feeding the numerous steam-engines of the mining districts. During the last twenty years, Swansea has also been supplied with copper ore from the shores of Europe, from Cuba, Mexico, Columbia, Peru, Chili, Australia, and New Zealand, and, in the present instance, a new source is opened.

Some of these foreign ores, consisting chiefly of the carbonate and red oxide, are very rich in copper; but by far the most abundant is copper pyrites, consisting chiefly of the sulphuret of copper, combined with the sulphuret of iron. No less than ten distinct processes are concerned in the reduction of the poorer ores. They are calcined in reverberatory furnaces, by which a considerable portion of the sulphuret of iron is converted into an oxide, while the sulphuret of copper remains unchanged. The calcined ore is strongly

heated with siliceous sand, which unites with the oxide of iron, and forms a vitreous scoria, or slag; which, being skimmed off, leaves the heavier copper compound behind. By repeating these processes, the iron, and other metallic impurities, are got rid of in the slag; the sulphuret of copper is then decomposed by heat, and converted into an oxide; and lastly, the oxide is reduced, with the assistance of carbonaceous matter and a very high temperature.

The management of the fuel in the reverberatory furnaces is interesting. These are of large size, being upwards of 20 feet long, and are so contrived that the flame of the fuel shall be reflected down upon the sole of the furnace, over which the ore is spread in a layer of a few inches in thickness. But as the anthracite, or Welsh stone coal, produces scarcely any flame, some contrivance was necessary, to apply to the useful purposes of the copper smelter the immense stores of this mineral fuel with which South Wales is supplied. When anthracite is raised to a very high temperature, it forms a vitreous scoria, or *clinker*, which, in the ordinary form of furnace, occasions great loss and embarrassment, by choking up the bars of the grate, and, combining with the iron of the bars, leads to their rapid destruction. In the Welsh furnaces, these clinkers are made to perform the office of the bottom bars of an ordinary furnace, supporting the fuel, and limiting the supply of air. The clinkers themselves are supported on iron bars, placed at considerable distances apart; these do not perform the usual office of grate-bars, but serve merely as supports for the clinkers which are piled upon them, so as to form a layer from 12 to 16 inches thick. Above this support, the fuel is in full combustion, and forms the hottest part of the fire; and here it is that fresh clinkers are being continually formed, and in the act of formation they cake with the numerous fragments of small coal heaped up above them. As this new clinker forms, it gradually descends towards the bottom of the fire, and, becoming chilled by the rapid current of ascending air which supports the combustion, splits and cracks into numerous fragments. In this way, new channels are formed, sufficiently large to admit the ascending air in powerful jets, which urge on the combustion, but not large enough to allow the small coal to fall out and escape. The calciner man, who has charge of the operation of calcining the ore, disengages a few of the bottom clinkers as they accumulate, so as to preserve certain relative proportions between the different parts of the fuel, which have been found by experience to be best adapted to the successful working of the fire.

The anthracite is mixed with about one-fourth of its weight of small bituminous coal, which, caking therewith, and swelling up by the heat, preserves in the mass the requisite degree of porosity. The layer of anthracite above the supporting clinkers is about 12 inches thick. The air traverses this layer through a multitude of channels, formed by the cracks in the clinkers, and the heated products of the combustion stream through the furnace. Under ordinary circumstances, the carbon of fuel under combustion is converted into carbonic acid, which is an uninflamable gas, and prevents the combustion of other bodies. By the above arrangement, however, the carbonic acid which is formed by the combustion of the fuel is deprived of a proportion of its oxygen, and is converted into the inflammable gas, carbonic oxide, before, or just as it escapes from the fire into the vault of the furnace. But its inflammable property would not, under ordinary cir-

circumstances, be displayed here, for it is accompanied by nitrogen, which will not support combustion; and the sulphuretted and arseniuretted hydrogen gases, liberated by the calcining ore, being combustible themselves, will not support combustion. In order, therefore, to enable the carbonic oxide to burn, it is necessary to supply it with a supporter of combustion, such as the oxygen of the atmosphere; and for this purpose an opening is made in the wall of the furnace, just above the ore, and each of the four furnace doors is furnished with a small hole. Through these apertures the air streams in with considerable force, depending, of course, upon the draught of the chimney, and supplying oxygen to the carbonic oxide, ignites it, and thus the whole surface of the ore is played upon by a thin sheet of flame, which burns only on its under surface, because its upper surface, or that of the carbonic oxide which supplies fuel to the flame, is in contact with gases which do not support combustion. In this way the calcination proceeds, and all the gaseous products thereof, and of the fire, are at length discharged through a chamber, or flue, into a tall chimney, and thence into the external air.—C. T.]

19 AIN MORKA MINES COMPANY, *Constantine*.

Steel, manufactured in France, from the iron ores of Ain Morka.

Assortment of files, manufactured in France, from the same ores.

Set of scythes, made of cast and refined steel, from the same.

20 BONE MINES AND IRON WORKS COMPANY, *Constantine*.

Specimens of raw steel castings and of cast steel.

21 CONVERSO, —, *Bone, Constantine*.

Writing-desk, in marquetry, made of native wood.

22 CURTET, —, jun., *Bab-el-Oued*—Manufacturer.

Samples of olive oil, oils of sesamum, mustard, cotton, brassica arvensis, ricinus, poppies, turnsol, &c.

23 DUPRE DE ST. MAUB, *Orbal, Oran*—Agriculturist.

Specimens of soft wheat, tobacco leaves, jumel cotton, wool, and madder roots.

24 FLECHY, J. B., *Algiers*—Manufacturer.

Paper and pasteboard, made of the dwarf palm-tree (*Chamærops humilis*) leaves, by patent process.

25 FRÉDÉRIC, JEAN BAPTISTE, *Montpensier, Algiers*—Agriculturist.

Sample of opium. White poppy capsules, of the crop 1850.

26 GRIMA, FRANCOIS, *Philippeville, Constantine*—Agriculturist.

White and nankeen, from cottons of the crop 1850.

27 HALOCHE, —, *Drariah, Algiers*—Agriculturist.

Cotton, of the crop of 1850.

28 HARDY, —, Manager of the Hamma Nursery, near *Algiers*.

Jamel, Louisiana, New York, and Georgia cottons.

Macedonia and nankeen cottons, crops of 1849 and 1850.

Raw silks, of 1849 and 1850.

Cochineal, opium, dry rice, and oleaginous seeds.

Varieties of maize.

Bamboo canes of eight and six months' growth.

[The cotton, tobacco, silk, wool, and cochineal of this colony are well worthy of notice. The specimens of red coral come from the great coral fisheries of La Calle, the

principal source of that precious product of the Mediterranean Sea. It is the stem of an anthozoid zoophyte.]

29 JEANTET, —, *Constantine*—Agriculturist.
Hard wheat and barley, of the crop 1850.

30 MOHA, JUDAS, *Oran*—Manufacturer.
Two gold embroidered silk dresses, for Jewish ladies.

31 JULIEN, —, *Bougie, Constantine*—Manufacturer of Preserves.
Pickled olives.

32 LAYA & Co., *Minoters, Algiers*.
Sample of native wheat flour.

33 LEPPELLETIER, —, *Fondouck, Algiers*—Agriculturist.
Soft wheat, crop of 1850.

34 DE LUTZOW, —, *Bone, Constantine*—Colonist.
Sample of saffron.

35 MAFFRE, ETIENNE FÉLIX, *Bougie, Constantine*—Manufacturer.
Fine olive oil.

36 MARCHAL, —, *Boudjaréah, Algiers*—Agriculturist.
Soft wheat and brown oats, crop of 1850.

37 MERCURIN, HENRY JOSEPH, *Cheragas, Algiers*.
Olive oil of 1850.

38 MONTIGNY, GASTON DE, *St. Joseph, Oran*—Agriculturist.
Soft wheat and barley, crop of 1850.
Madder root. Saffron.

39 MORIN, —, *El Biar, Algiers*—Agriculturist.
Tobacco in leaves, called Philippin. Cut tobacco. Cigars.
Jumel cotton, crop of 1850. Silk in cocoons, and spun silk.

40 OXÉDA & AQUI, *Algiers*—Cigar Manufacturers.
Samples of cigars of various qualities.

41 FISHERIES OF LA CALLE, *Constantine*.
Red coral; branches preserved in alcohol.
Raw coral; branches in their natural state.
Red chalkstone, extracted seven or eight years ago.

42 PELISSIER, CALIXTE, *Kaddous, Algiers*—Agriculturist.
Specimens of white cotton.

43 FIGLIA, JOSEPH, *Constantine*—Agriculturist.
Specimen of madder-root.

44 REVERCHON, HIPPOLYTE, *Birkadem*—Agriculturist.
Tobacco in leaves, and Jumel cotton, crop of 1850.

45 COMMISSION OF THE MINES OF ALGIERS, *F of Algiers*.
Samples of various ores in the unwrought state.
Native copper and grey crystallized copper.
Crystallized grey copper of M.

Copper pyrites of Oued Akhbab, Moudja, Bouhanna, Kaber, Aïchoua, Bama, Moudia Nidjal.
Argentiferous lead of Pseudis Point.
Oxyptic iron of Sidi El Mehdi.

46. COMMISSIONERS OF THE MINES, Bône, Constantine.

Sample of ore.—
El Melhah and Ain Barber pyrites lumps.
Carbonate of copper of Oued Thelhal.
Copper mixed with zinc of Ain Barber.
Oxide of antimony and Taya crincher.
Sulphuret of antimony of Taya and Sema, and of Ghilma.
Bright and dull galena (lead ore) of Oued Thelhal.
Antimonial galena of Djebel Cherguin.
Magnetic iron of Sidi Saï.
Oxyptic iron of Mount Filfilah.
Oxide of iron of Filfilah, El M'Kroum, Oued El Krah, Ain Cherguin, Bouhanna, Moudia, El Haidi, Ain Mardout, Beldjien, and Moudia.
White marble of Mount Filfilah.
Lignite of Soudania.

[This collection presents a favourable picture of the mineral and metallurgical resources of this recently-established colony. Copper appears to be found in considerable abundance, and is accompanied by zinc. The specimens of lead, iron, and antimonial ores indicate also the existence of sources of these metals which may ultimately become valuable. If the lignite exhibited is adapted for fuel, it will not prove the least important.—R. E.]

47. COMMISSIONERS OF WOODS AND FORESTS, Algeria.

Collection of native wood, such as cedar, oak, cork-tree, cedar-leaved juniper, jujube-tree, caroba-tree, wild olive, arbutus, sumac, turpentine-tree, lentisk, cypress woods, &c.
Samples of cork of the Lacalle and Edough forests.
Tannery's bark.

48. SO-ARAB-EL-HACHEDI, of the ARAB Cherguin Tribe, Province of Constantine.

A lambel, a species of woollen blanket or carpet.

49. SO-ARAB-SHEN (his wife), Province of Constantine.

Sample of hand-spun wool.

50. SO-EL-BEY BEN-BOK-RIA, Constantine—Manufacturer.

Arab saddle, with gold and silver embroidered moosem covering, and every appendage forming an Arab horseman's equipment.

51. SIMONNET, PIERRE, Algiers—Manufacturer.

Perfumed essences of jasmine, geranium, &c.

52. SOUAI, —, Bône, Constantine—Edge-tool Maker.

An iron axe.

53. TRIBE OF THE BENS ABRA, Province of Constantine.

A white sheet burnous.

54. TRIBE OF THE BOK TALEB, Province of Constantine.

A haïk boutalbi.

55. TRIBE OF THE DRIBEN, Province of Constantine.

Woollen burnous.

56. TRIBE OF THE HARACTAS, Province of Constantine.

Specimen of raw wool. Two large woollen carpets. A woollen blanket.

57. VERRIER, FERRIAND, Algiers—Manufacturer of Preserves.

Sardines preserved in oil.

58. THE DOMESTIC OF ALGERIA.

Spun cottons.—
Cotton yarn and twist: various samples, from Nos. 200 to 400; spun by Edmond, Cox, and Co., & in Lourdes-Les-Lille, with long staple cotton from Algeria, called Georgian, crop 1852.

Silks.—
Piece of figured lampas, in Algerian silk, crop of 1850, manufactured at Lyons.

Piece of glazed taffetas, in rose and white silk, likewise in Algerian silk, manufactured at Lyons.

Sample of goose angora taffetas, in Algerian silk.
Various Algerian fabrics.

Woolens.—
Large woollen carpet, manufactured by the Arabs of the province of Constantine.

Large carpet (long wool), manufactured in the neighbourhood of Mascara, province of Oran.

Mat of wool and esparto, from Sidi Bel Abbès.

Six carpets, of different sizes and hues, of indigenous manufacture.

Small carpet, manufactured at Mascara, province of Oran.

Blanket, with red fringe. Blanket, with yellow and green fringe. Roll of woollen tissues, for coils in Arab tents. Belt, in red wool. Burnous, with red stripes. Burnous joudi, white. Burnous of Gerbia. Burnous Djerrid.

Sack, striped red and green; and another, with black and brown stripes.

Haïk, in white cotton and wool; and another in wool. New scarf.

Various articles of indigenous silversmiths' work.

Various articles.—
Five hats, of cotton felt, manufactured in Algeria, with and without hair: manufactured by Messrs. Ernouf-Duch, at Paris.

Three samples of the first attempts at felting made by the manufacturer with Algerian cotton.

Sample of paper manufactured in France with alces tree and Algerian banana-tree.

59. BARTHE TOULDANO, Oran—Embroiderer.

Petticoat of silk, embroidered with gold, for a Jewess.

60. CHELIF BEN MENEUCY, Spinner of the tribe of Beni Abbes, Constantine.

White sheet burnous.

61. CAID BEN ZEKKI DES SENGAS (the wife of), Constantine.

Gandouras, made of wool and silk.

62. MOHAMED BEN ACHIR (Caid of Mascara), Oran.

Burnous, in black wool.

63. SAID BEN BARTHA, Bône, Constantine.

Basket, made with the leaves of the palm-tree, mixed with woollen.

64. SI HAMOU BEN OYATAP, Zemmoura, Constantine—Spinner.

Burnous, made with camel's hair.

65. SI ALI BEN LAMOUCEL, Constantine—Merchant.

Zemmour burnous, with red stripes.

66. SI EL MEDANI (tribe of the Ouled Taben of Bon Taleb), Constantine—Spinner.

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| <p>67 TRIBE OF THE BENI SNOUS, Oran.
 Mat, made of the bark of a palm-tree, mixed with wool.</p> <hr/> <p>68 COX, E., & Co., Louviers-les-Lille—Spinners.
 Cotton spun with the cotton of 1850.
 Series of samples from Nos. 200 to 360, single thread;
 and No. 400, double thread.</p> <hr/> <p>1663 MOHAMED BEN SALAH, Beni Abès, Province of
 Constantine—Weaver.
 A white abessi Mouzaiah burnous.</p> | <p>1694 SI AMON BEN OUART, A. F., Zamoura, Province
 of Constantine—Weaver.
 A zamouri burnous.</p> <hr/> <p>1695 SI ALI BEN LAMOUCI, Constantine.
 A burnous zamouri.</p> <hr/> <p>1696 SI HAMIDA, Mupâti of Oran.
 A woollen common caban.</p> <hr/> <p>1560 MIMON, CHERIF BEN, Beni Abès, Constantine—
 Weaver.
 A white abessi burnous.</p> |
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SOUTH AREA, L. M. 43 TO 45 ; N. 44, 45 ; O. P. 43 TO 45 ; Q. R. 44, 45 ; S. 44.

SOUTH EAST CENTRAL GALLERY, M. 41, 42.

Commissioners in London, PROFESSOR BOLLETAVAU, K. EICHHOLZER, St. Gall ; PROFESSOR D. COLLADON, Geneva.

SWITZERLAND is a federal State composed of twenty-two cantons, which, till 1847, formed independent and distinctive States, possessing a commercial tariff and customs of their own. In 1850 these cantons submitted to a systematic tariff of customs, equally enjoyed by the whole of the confederation: these tariffs are at present undergoing some modifications. The statistical importation and exportation tables of Switzerland, compared with other countries, are extremely uncertain, and in the present introduction and subsequent notes we are frequently compelled to confine ourselves to simple and general facts.* Since the 1st of January 1851, Switzerland has adopted an uniform currency, which is called the federal franc, of the same value and the same subdivisions as the franc of France. They are at present giving their attention to an uniform system of weights and measures, and it is very probable that analogous decimal measures to those of France, Belgium, and Lombardy, will before long be adopted. The quintal is equivalent to 50 kilogrammes, or about 110 lbs. avoirdupois.

Switzerland possesses many metallurgical mines, of which only a very small number are worked. Many have been abandoned, owing to the produce of the metals not paying the expenses of working them. Mines are still worked with some advantage yielding the following metals: iron, copper, nickel, cobalt, argentiferous lead and zinc; but not in sufficient quantity for home consumption.

Berne, Soleure, Schaffhausen, St. Gall, Grisons, and Valais, are the principal cantons that produce iron. The iron produced at Berne has a high reputation for its tenacity, malleability, and resistance to fire. During the reign of Napoleon Bonaparte the iron of this canton was much used for the manufacture of gun-barrels.

The manufacture of wire is also of importance, and the celebrated suspension bridge of Fribourg, with a single span of nearly 900 feet, was made of the wire of the Bernese Jura. The canton of Schaffhausen is celebrated for the excellence of its cast and wrought steel, easily distinguished from the other kinds. The canton of Valais possesses many rich beds of iron, which is exported to St. Etienne in France, where it is manufactured into cast steel. The importations of cast and manufactured iron, zinc, copper, tin, lead, &c., are considerable. These metals come from England, Belgium, France, and various States of Germany, &c.

Switzerland possesses many salt-mines or saline springs; the most important are those of Bâle-Campagne, Vaud, and Argovie. These mines do not suffice for above half the demand.

There are but few coal-mines, and these of little value; coals are imported from France. The canton of Neuchâtel possesses some bituminous lime mines, from which they extract asphalt, and export in small quantities.

Beds of slate, gypsum, numerous varieties of marble, and various minerals, are likewise to be found in this country.

Switzerland has a considerable number of manufactories of earthenware, the produce of which is largely exported from the cantons of Zurich, Berne, and Schaffhausen. The potteries of Winterthur and Schaffhausen are justly celebrated for the beauty and variety of their productions. China, and the finer kinds of earthenware, are manufactured at Vaud, Geneva, and Argovie. The finer earthenware and china is imported from Germany, France, and England.

Switzerland possesses in abundance clay for the manufacture of bricks and tiles, the demand for which, however, is very limited, owing to the low price of stone, slate, and wood. There are about fifteen glass factories, which are employed principally in the manufacture of bottles and glass for windows; the annual importation of glass and crystal is about 20,000 quintals of 50 kilogrammes. Common glass is imported from the Duchy of Baden and Savoy, the finer kinds from France, Bavaria, Bohemia, and England.

* For further information, "Statistique de la Suisse," by M. S. Francini, and the works of Dr. de Goetzenlach, may be consulted.



The canton of Soleure is celebrated for its manufactory of flint and crown glass for optical instruments, the superiority of which is so universally esteemed as to be much sought after by the most eminent opticians of Europe and America.

The principal chemical manufactories are those of the cantons of Zurich, Berne, Soleure, Bâle, Glaris, and Argovie; the supply, however, is not equal to the demand, and the annual importation from other countries is about 60,000 quintals.

The vine is cultivated in all the cantons, with the exception of Uri, Unterwald, and Glaris.

Several of the cantons have large manufactories of soap, and nearly all manufacture candles; the tallow is imported from Russia. France sends to Switzerland about 30,000 quintals of soap annually.

Switzerland is extremely rich in cattle and other animals. There are about 850,000 oxen and cattle, 500,000 sheep, 350,000 goats, &c., for which her rich pastures and numerous forests are well suited. Although this country is most favourably adapted for the extension of tanneries, this art is not largely or successfully pursued. The enormous duties on the importation of leather into France, and some of the States of Germany, has had an extremely prejudicial effect on this important branch of commerce; but the present facilities for transport is likely before long to render this trade one of the most considerable and valuable of the country. Her exports are, however, considerable in the skins of oxen, cows, sheep, and goats, tanned and untanned. The exportation to France alone exceeds 800,000 kilogrammes annually. The large skins are held in great estimation for their solidity and durability, and are much sought after for the manufacture of the soles of shoes. A considerable foreign trade is likewise carried on in calf-skins, which is much used by the boot-makers. In the north and west of Switzerland are a few manufacturers of chamois leather, morocco, and varnished leather.

Switzerland is also rich in the number of her forests, and the wood that grows in the more elevated portions of the country is highly esteemed for building purposes, much of which is exported into France, Algeria, and Germany. In many of the mountainous districts, and particularly in the Bernese Oberland, the artisans carry on a considerable trade in carved wood, such as furniture, fancy articles, &c., a few of which are exported. Her manufactories in wooden agricultural implements have arrived at a very high state of perfection in many of the cantons. Of these various specimens are shown.

The breeding and care of cattle is one of the most ancient pursuits of the Swiss. The rich pastures of the Alps, the purity of the air and water, give that superiority to the Swiss cattle, which they even preserve abroad. It is a remarkable fact, that even the cows sent into a warm climate preserve the property of giving a superior quantity and quality of milk; the consequence is, that above 15,000 oxen and cows, as well as 20,000 calves, are annually exported to the south of Europe and Algeria.

The Swiss export a considerable quantity of cattle to France. Their breed of horses are noted for their strength and great power of endurance; they export from 5,000 to 6,000 annually, as well as about 20,000 sheep. The cow-bells and agricultural implements exhibited suggest these facts.

The Swiss cheese enjoys a deservedly high reputation, due to the breed of cattle and the perfumed pastures of the high Alps. They export largely into almost every country. The cheeses of Gruyère, Emmenthal, and Schabzieger, are held in high esteem, and keep for many years.

Nine only of the twenty-two cantons of Switzerland produce the cereals in sufficient quantity for their own consumption; these are—Lucerne, Fribourg, Soleure, Schaffhausen, Berne, Argovie, and Vaud. A considerable quantity of corn, maize, and rice, is imported into Switzerland, principally from Germany and Lombardy. For remarks on the manufactured articles exhibited, reference will now be made to their proper places.—D. C.

1 NEUHAUS and BLÖSCH, *Biemme*—Manufacturers.

Iron wire, for making cards for the purpose of carding wool and cotton, for watch springs, and other purposes.

Iron-ore and metal, the production of mines situated in the canton of Berne. The specimens are cast and forged in the same district.

2 SUCHARD, PHILLIP, *Neuchâtel*—Inventor and Manufacturer.

Specimens of fine chocolate; ditto à la Vanille; small boxes, samples of the same.

3 KEIGEL, FREDERIC AUGUSTE, *Couvet, Canton of Neuchâtel*—Inventor and Manufacturer.

A pivot-tool for rolling and finishing pivots, with cylinder and screws, set in sapphire and used to make the corner or cylinder-pivots.

A cylinder set in sapphire, connected with the pivot-tool, arranged to finish the cylinder pivots. The advantages are, that the notches do not wear out, and are not subject to decomposition. Steel cylinder with 3 notches, to finish the seconds pivots. Steel ditto with 12 notches, 12 corresponding holes for finishing and shortening the pivots.

Depthening tool, in three parts. This tool is principally intended for lever escapement makers.

A turning apparatus for finishing pivots (old style).

Another, for finishing the pivots for clocks, &c. A cylinder connected with the same.

A common depthening tool. A gauge for taking the size of the pivots.

4 ERBEAU, JULES, *Trarers, Canton of Neuchâtel*—Manufacturer.

A universal turn plate of $4\frac{1}{2}$ inches, fixed graver with 5 motions, rest 12 gravers, two sets of dogs, upright with two cylinders, one to plant and one to drill, a sinking tool frame, 6 sinkers; the plate is supplied with clasps, and extra clasps for jewellery.

A pivoting turn plate, assorted with 12 notches, 12 lanterns, notches for seconds, pivots, and gauge.

A depthening tool, 2.3 inches. An upright tool.

5 JEANNET, FREDERIC, *Locle, Canton of Neuchâtel*—Manufacturer.

A rifle, with the customary appendages, steel barrel, for conical bullets; the name, Fritz Dehn, is on the barrel.

6 BANDELIER, PIERRE FREDERIC, *Locle, Canton of Neuchâtel*—Inventor.

Four springs, two of them for going fusée, viz., for patent lever watches, and two for *l'épine* movements.

7 IUNOD BROTHERS, *Chaux-de-fonds, Canton of Neuchâtel*—Manufacturers.

A repeater watch, size 1·7 inches, gold case and dome striking the hours, quarters, and minutes, duplex escapement pallet, roller, and 24 rubies, compensation balance, Breguet pendulum spring, engine-turned case with a subject in the centre.

8 GRANDJEAN, HENRY, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

Pocket chronometer, gold hunting engine-turned case, $\frac{3}{4}$ -plate movement 1·6 inches going fusee, detached escapement, spherical pendulum spring, and adjusted at a temperature of -12° to 15° to $+25^{\circ}$ to 30° Reaumur.

Pocket chronometer, gold hunting case, 1·6 inches, cap movements, going, barrel lever escapement à Baseule.

Gold hunting watch, engraved, 1·7 inches, style of regulator with duplex escapement, fixed seconds.

Gold watch, engraved historical subject, cap movements, 1·6 inches, lever escapement, independent seconds with one set of wheels, eccentric running seconds, regulated in every position at a moderate temperature.

Gold watch, engraved historical subject, 1·6 inches, double dials independent, with one set of wheels.

Gold watch, 1·6 inches, going eight days, two barrels, lever escapement, and regulated in all positions.

9 DUBOIS, F. WILLIAMS, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

An astronomical clock, lever escapement, on a new principle, which is claimed to be to the clock what Arnold's escapement is to the watch, compared with other escapements. The pendulum consists of five large and two small rods of steel and composition, arranged on a new principle, to obtain easily the highest degree of precision in the compensation of the pendulum.

[Its variation in length is less than $\frac{1}{10000}$ th of an inch for a change of temperature of 45° of Fahrenheit's scale. It is suspended on a knife-edge of very hard bronze. It needs winding once only in thirty-five days. The weight of the pendulum is nearly 35 lbs.—J. G.]

A marine chronometer, on a new calibre.

10 FAVRE AUGUSTE, EDWARD, *Locle, Canton of Neuchâtel*—Manufacturer.

A pocket chronometer, Tourbillon escapement, with thermometer.

11 FAVRE BRANDT, AUGUSTE, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

Instrument for determining the epicycloidal curve of the teeth of wheels and pinions in watchmaking.

12 VUILLEUMIER, DE LA REUSILLE, *Tramelan, Canton of Berne*—Manufacturer.

A repeating watch and clock, striking regularly or at will. Cylinder escapement, 8 holes jewelled in rubies, new calibre, gold dome and dial, with engraving.

An eight-day watch, fine cylinder escapement, 8 holes jewelled in rubies, showing the days of the week and of the month, gold case and dome, engraving of the days of the week.

A watch with independent seconds, lever escapement, visible pallets, 20 holes jewelled in rubies, gold case and dome, with engraving.

Two small ladies' watches, cylinder escapements, 8 holes jewelled in rubies, gold cases and domes, with engravings.

A watch in an unfinished state, repeating and striking at will, lever escapement, visible pallets, with compensation and parachute.

13 BOVET, FRITZ, *Waldenbourg, Canton of Bâle*—Inventor.

A watch, going for one year without winding, gold case, dial and dome, cylinder escapement, 16 holes jewelled in

rubies. The movement calibre of the watch made and invented by the exhibitor. The diameter of the movement is 2 inches, and the depth $\frac{1}{2}$ inch; on the dial is an engraving of the island of St. Peter.

A gold watch, *Lépine* movement, enamel dial with seconds, straight line, lever escapement, visible pallets, 15 holes, and the pallets in rubies. Size of the watch $1\frac{1}{4}$ inches diameter, and depth $\frac{1}{4}$ inch.

14 RAUSS & COLOMB, *Chaux-de-fonds, Canton of Neuchâtel*—Manufacturers.

A gold engine-turned watch, chronometer escapement, 12 holes jewelled in rubies, six ruby end pieces, enamel dial with sunk seconds.

A similar watch with engraved back.

15 MERMOD BROTHERS, *Sainte Croix, Canton of Vaud*—Manufacturers.

A gold watch, size about 1 inch, cylinder escapement, 9 holes jewelled in rubies, to wind up by the pendant, the case ornamented with diamonds on a royal-blue enamel back.

Gold watch, to go eight days without winding, cylinder escapement, size 1·7 inches, 8 holes jewelled in rubies.

Gold watch, size 1·6 inches, lever escapement, straight line, 3 pallets and 14 jewels, the case ornamented with a lion in black enamel, on a sky-blue enamel back.

A chronometer, gold case, detached escapement after Arnold, size about $1\frac{1}{4}$ inches, 14 jewels and 3 pallets, compensation balance.

A gold watch, marking the days of the month, lever escapement, 22 holes jewelled, compensation balance, size 1·7 inches, the arms of England engraved on the case.

Gold watch, size 1·15 inches, cylinder escapement, 8 holes jewelled in rubies. The case forming at will, three distinct watches, viz. a hunting case, a central watch, and a lady's watch, royal blue enamelled back, with picture.

[The manufacture of watches is one of the three principal branches of Helvetic commerce; it is not general, but confined particularly to the cantons of Geneva, Neuchâtel, Vaud, part of the Bernese Jura, and the Canton of Bâle. This department of industry has never prospered in any of the other cantons, and is at present entirely abandoned.

This fact is entirely owing to local circumstances, and the prosperity of the trade has steadily and gradually increased, independent either of protective duties or Government patronage, whilst in other countries this manufacture, supported by Government, and an immense outlay of capital, has hitherto never succeeded.

The principal circumstances which have contributed to its development in the Cantons of Geneva and Neuchâtel, have been the abundance of capital, the low interest of money, cheap labour, and the absence of other trades; the general instruction of the population, with a natural aptitude and taste for fine and delicate work, combined with a love for commerce, and finally the inclement and severe winter of the valleys of the Jura,* and the natural love of order, patience, and industry of the inhabitants.

The division of labour in this department are so numerous, that the movement of a watch, the value of £s, will frequently pass through more than sixty hands.

The Cantons of Geneva, Neuchâtel, Vaud, and Bernese Jura, are calculated to manufacture two-thirds of the watches in the world; the total annual estimation of which is about 1,200,000.—D. C.]

* The thermometer often descends 15° Fahrenheit below zero, or 26° Ther. Centigrade.

16 DELLY, MREOZ, *Sovilliers, Canton of Berne*—
Manufacturer.

A gold hunting watch, gold dome, lever escapement, compensation balance, 10 holes jewelled in rubies, Breguet pendulum spring, visible pallets.

A gold watch, gold dome, lever escapement, compensation balance, 10 holes jewelled in rubies, Breguet pendulum spring, covered pallets.

17 KOPP, HENRI F. J., *Travers, Canton of Neuchâtel*
—Manufacturer.

A repeating watch, with dead or independent seconds, with one train of wheels only, the mechanism of the seconds jewelled in rubies, Breguet movement (with keys), ruby cylinder escapement, compensation balance, 14 holes jewelled in rubies, gold case 18 karats, silver dial, with an enamel dial for change, enclosed in a shell box.

18 PERRET, AUGUSTIN, *Brenets, Canton of Neuchâtel*
—Inventor and Proprietor.

Improved pocket clock and independent repeater, striking the hours, quarters, and minutes. The hands can be moved backwards or forwards, in every position of the watch. The striking and repeating works can go together, so that they may not be put out of order by turning the hands or making the watch strike.

19 BOREL, HENRI JUSTIN, *Chaux-de-fonds, Canton of Neuchâtel*—Manufacturer.

Two travelling clocks, called imperials, going eight days with great and small chimes and stop, repeater, alarm, days of the month, excentric with seconds, chronometer escapement, compensation balance.

20 MOSEB, FRANCIS, jun., *Bienne, Canton of Berne*
—Manufacturer.

A gold watch, hunting case, gold dome, silver gilt dial, straight line lever escapement, full plates, 1.6 inches, ten holes in rubies, frame engraved.

21 PERRET, DAVID, & SON, *Locle, Canton of Neuchâtel*—Manufacturers.

A silver hunting watch, metal dome, size 1.7 inches, enamel dial, with sunk seconds, lever escapement.

A watch similar to the preceding, but with open face and glass.

A gold open-face watch, gold dome, gold dial, with solid figures, size nineteen lines, lever escapement; weight of the case 17 dwts.

A watch, similar to the preceding, with metal dome, gilt silver dial, solid gold figures.

A gold hunting watch, gold dome, solid figures, size 1.7 inches, lever escapement; weight of case 1 oz. 5 dwts.

A watch similar to the preceding, with metal dome, gilt silver dial, gold raised figures; weight of case 1 oz.

[The more expensive and finer kind of watches are manufactured at Geneva, as well as a great number of chronometers. Watch-cases are principally made in this town, and it is calculated that more than 600 chasers are employed in this department, as well as a considerable number of enamel-painters. The small watches which are mounted in bracelets, rings, &c., are made in this town. Marine-chronometers are executed according to order.

The watch-trade of the Canton of Neuchâtel, is centred principally in the small towns of Locle and Chaux-de-fonds, situated in the middle of the valleys of the Jura. The whole of the valleys surrounding these two towns are entirely inhabited by watchmakers and their families; the greater number work in "companionship" (*parties brisées*).

These valleys contain six extensive factories for the manufacture of unfinished movements, as well as a number of workshops for watch-wheels, pinions, escapements, compensating balances, watch-cases, springs, &c.; all these

articles are minutely and carefully inspected by the principal manufacturers, before being exported. Although the greater part of the watch-manufacturers of the Cantons of Neuchâtel, Berne, and Vaud, are more especially engaged in the manufacture of cheap and inferior watches, there are still some of the larger firms, who employ many eminent workmen in the construction of pocket and marine chronometers, as well as astronomical watches. These three cantons, as well as that of Geneva, contain numerous factories, exclusively employed in the construction of machines and instruments employed in this trade, and in the manufacture of articles connected with it, such as dials, watch-hands, springs, keys, watch-jewels, &c.

There are but few houses engaged in the manufacture of clocks, the trade of which is extremely limited.

Many of the cantons, especially Geneva, Zurich, Berne, and Bâle, possess several factories of jewellery, more particularly for the home supply, there being only a small exportation for Italy and Germany. This trade is of some importance at Geneva, which possesses several considerable factories, which export largely.—D. C.]

22 AUDEMARS, LOUIS, *Brassus, Canton of Vaud*—
Manufacturer.

A watch with two dials, independent seconds, Breguet escapement, short fork, with compensation balance, showing the phases of the moon, days of the week and month, seconds, and fifth of seconds.

A clock watch, striking the hours and the quarters, winding and hands set by the pendant, Breguet escapement, short fork, compensation balance.

A repeating watch, independent seconds, duplex escapement, compensation balance.

A minute repeating watch, Breguet escapement, short fork, compensation balance.

A pocket chronometer.

A watch, half plate, Robin escapement, double rest, compensation balance.

A watch, detached escapement, Bascule, compensation balance.

A watch, Paris calibre, Breguet escapement, short fork, compensation balance.

A repeating watch, cylinder escapement.

A hunting watch, winding and regulating by the pendant, the winding part being after the system of the Breguet key, duplex compensation balance.

An open-faced watch, same as last, but with cylinder escapement and common balance.

A pistol, composed of twenty pieces, acting perfectly, and weighing only half a grain.

23 FAVEE, HENRI AUGUSTE, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

A pocket chronometer, Tourbillon escapement, in gold hunting-case, size one inch and seven-tenths.

A pocket chronometer, furnished with an isochronous pendulum spring and fancy calibre.

A chronograph for taking, to a fifth part of a second, the time of observations. By pressing the knob the point marks itself on the dial, and the hand continues going. The second hand, showing the fifth of a second, being independent of the movement, stops at will, without altering the motion of the watch. In order to cause the hand to make a mark on the dial, it is sufficient to press the small knob placed near the pendant, and the mark or point is made without slackening the hand: 300 such observations can be made in one minute. The ancient chronographs had two movements: the mechanism of this has one only, which is much simplified, and is furnished with Breguet spring, lever escapement, visible pallets, and is in a gold hunting-case.

24 GROSCLAUDE, CHARLES HENRI, *Fleurier, Canton of Neuchâtel*—Inventor and Manufacturer.

An open-faced watch, with gold case and dome, engine-turned case, enamel dial, gold hands, straight line lever escapement, twenty holes, six top-holes and three pallets jewelled in rubies, compensated balance, independent seconds, two dials, and quarter-seconds. The hands of the right dial can be stopped at will by the bolt nearest to the pendant; the centre seconds and the quarter-seconds can be stopped by the bolt nearest to the hour-mark, six. This watch has only one barrel.

An open-faced watch, with gold case and dome, engine-turned back, enamel dial, gold hands, straight line lever-escapement, twenty holes, eight top holes and three pallets jewelled in rubies, compensated balance, independent seconds, two dials, and running seconds from the centre. The hands of the right-hand dial can be stopped at will by the bolt nearest to the pendant; the independent seconds can be stopped at will by the bottom bolt; the running seconds continue to move with the left dial. This watch has only one barrel.

25 LECOULTRE, ANTOINE, *Sentier, Canton of Vaud*—Inventor and Manufacturer.

A pocket chronometer, gold case, straight line lever-escapement, short fork, compensation balance, coudé pendulum spring.

Pocket chronometer, straight line lever-escapement, short fork, compensation balance, coudé pendulum-spring, to wind up by the pendant.

Pocket chronometer, detached escapement, coudé pendulum-spring, compensation balance, having double stop on the balance to prevent the tripping, to which that kind of escapement is subject when shaken.

Pocket chronometer, silver case, with duplex escapement, maintaining power, compensation balance, flat pendulum spring.

A three-quarter plate movement, going, in a rough state, chronometer escapement, coudé pendulum spring, to wind up by the pendant.

Six movements, without escapement, with this peculiarity, that after being taken to pieces, and the pieces mixed, they can be placed together again, taking each piece as it presents itself, with the exception of the barrels and indexes and the screws.

An assortment of pinions, produced by a peculiar machine.

26 E. & A. PAILLARD BROTHERS, *Sainte Croix, Canton of Vaud*—Manufacturers.

A musical box—Mandoline.

Musical snuff-boxes, playing respectively two, three, and four tunes.

27 JACCARD BROTHERS, *Sainte Croix, Canton of Vaud*—Manufacturers.

Musical snuff-boxes, in horn and tortoiseshell, silver mounted, playing two, three, four, and six tunes. Another box, playing four overtures.

28 VACHER, CESAR, *Fleurier, Canton of Neuchâtel*—Manufacturer.

A watch, gold case, Breguet movement, with equation, seconds and days of the month, silver dial, gold dome, ruby cylinder, eight holes jewelled; weight of case, 34 dwts.

29 EVARD, EDWARD PHILLIPIN, *St. Blaise, Canton of Neuchâtel*—Manufacturer.

A gold watch, diameter about 1½ inches, lever escapement, visible pallets, with compensation balance. The pendulum spring facilitates the regulation of the watch, by its being close to the centre. The balance has two rollers, one for the safety pin, and the other for the lever. Jewelled in 21 holes with rubies. The cup is of chrysolite movement, festooned and engraved. Gold case weighs 24 dwts.; the back and dome are engraved.

30 GIRAUD, PETER, *Chaux-de-fonds, Canton of Neuchâtel*—Manufacturer.

A travelling clock, eight-day movement, possessing an alarm, and showing days of the month, eccentric, great chimes during the night and small during the day, repeats at will, enamel dials, anchor escapement, visible pallets, compensation balance, 17 holes in rubies, case engraved, the movement electro-gilt.

31 BOCK, HENRI, *Loche, Canton of Neuchâtel*—Manufacturer.

Three watches, silver cases, enamel dials, cylinder escapements, four holes jewelled.

Three watches, silver cases, enamel dials, lever escapements, 10 holes jewelled.

32 LECOULTRE, D., & SON, *Brassus, Canton of Vaud*—Manufacturer.

A large musical box, with two combs, playing the following overtures, viz., De Semiramis by Rossini; Robert le Diable by Meyerbeer, and Guillaume Tell by Rossini.

33 JAQUES, LOUIS, & SON, *St. Croix, Canton of Vaud*—Manufacturers.

Musical boxes, playing respectively 8 tunes, with forte-piano; mandoline, 4 tunes; 6 tunes, with drum and cymbals; 4 tunes, with castanets and cymbals; large size, 4 overtures, with forte-piano; mandoline, large size, 4 tunes, with forte-piano; two small, 4 tunes; two small, 3 tunes; six small, 2 tunes; and one, 6 tunes with forte-piano.

34 COURVOISIER, FRED., *Chaux-de-fonds, Canton of Neuchâtel*—Manufacturer.

A gold pocket-chronometer, size about 1½ inches, Swiss calibre, and regulated from 15° Reaumur, below, to 25° to 30° Reaumur, above zero.

A gold hunting-watch, engraved cases, ¾-plate movement, 1.6 inches, going fusee, spring lever escapement, 8 holes in rubies, silver and enamel dial.

Gold watches:—Watch with engine-turned case, enamel dial, 1.6 inches, independent seconds, lever escapement, Breguet pendulum spring; a hunter, engine-turned case, enamel dial, 1.6 inches diameter, seconds, duplex, 8 holes in rubies; a watch with gold dome, engraved movement, lever escapement, 10 holes in rubies, compensated balance; another gold watch, engraved gold dial, 1½ inches diameter, seconds with straight line, lever escapement, 22 rubies. Silver watches:—One with enamel dial, 1.7 inches diameter, seconds, metal dome, cylinder, 8 holes jewelled, name Houriet; one, plated gold edges, engraved back, enamel dial, cylinder, 4 holes jewelled, metal dome, name G. Grand; a hunter, engraved, enamel dial, 1½ inches diameter, full plate movement, cylinder, 4 holes; and one, engraved, enamel dial, 1½ inches diameter, verge escapement, name Achard.

35 BOVET & CO., *Neuchâtel*—Manufacturers.

Cylinder prints, respectively pink, ultra-marine, covered ground, coloured, and cylinder green.

Handkerchiefs, of varied grounds, with centres; and also plain.

Mezari satin handkerchiefs.

Cylinder prints—lilac; Phillipine; lilac sanded; violet ground; Persian; furniture, with white ground; varied, furniture prints.

Sundry jaconots, cotton prints, and furniture print.

36 VACHER, DU PASQUIER & CO., *Cortailod, Canton of Neuchâtel*—Manufacturers. (Agent, Henry Pahud, 20 Bread Street, Cheapside.)

Cotton prints in a variety of colours and designs, adapted for dresses and furniture. Jaconots and muslins in checks and coloured.

Printed at the manufactory of Cortailod, near Neuchâtel.

- 37 **BOREL, BOYER, & Co., Neuchâtel**—Inventors and Manufacturers. (Agent, G. Bahud, 20 Bread Street, City.)

Helvetic grey warp and weft woollen yarn. Steel grey, the warp of thread, the weft of wool. Blue, dyed in wool with indigo, warp and weft woollen yarn. In the natural state, thread warp and wool weft. Blue, dyed in the wool with indigo, wool warp and weft.

- 38 **JEANNERET BROTHERS, Neuchâtel**—Inventors and Manufacturers.

Large round baskets ornamented with blue satin; others with satins of various colours watered. The baskets also vary in shape.

Hats and caps for men and boys.

Ladies' bonnets, with lace foundation, straw ornaments; with flowers, &c.; new Tuscan bonnets, yellow Bananian. Lace for bonnets.

- 39 **PERRET, CHARLOTTE, Locle, Canton of Neuchâtel**—Manufacturer.

A piece of wide lace, 4 French ells in length.

- 40 **BESSON, AUGUSTE DAVID, Couvet, Canton of Neuchâtel**—Manufacturer.

White blonde, measuring 3 yards 1 inch.

- 41 **MATHEY, FATHER & SON, Locle, Canton of Neuchâtel**—Manufacturers.

A cylinder of rolled steel, about $2\frac{1}{4}$ inches in width, length about 109 yards, weight about $7\frac{1}{2}$ lbs., for watch springs, suspension of pendulums, and watch chains. The rough steel manufactured by Messrs. Richard Gros and Son, of Sheffield.

- 42 **SCHNEITER, J. D., Tavannes, Canton of Berne**—Inventor and Producer.

Map of Switzerland, in relief.

[This specimen is an interesting example of this peculiar manufacture. The exhibitor is the only manufacturer of maps in relief, in Switzerland. The method which he has invented consists in the use of thick elastic paper, so prepared as to be at once light and strong, and capable of being washed.—R. E.]

- 43 **DUBOIS, ADOLPHE, Chaurdefonds, Neuchâtel**—Designer and Engraver.

Gold plate, exhibiting emblematic figures; ornamental designs for watchmaking, jewellery, &c.; flowers; and fruits.

- 44 **PATTON, JACQUES, Chaurdefonds, Neuchâtel**—Artist.

A gold plate, exhibiting letter engraving in a new style, adapted to this art by the producer.

- 45 **KUNDEBT, FRITZ, Chaurdefonds, Neuchâtel**—Artist.

An engraved gold plate, with copy of an ancient German engraving, representing a subject from the history of Switzerland during the time of the Austrian dominion in the primitive cantons.

An engraved gold plate, representing Swiss scenery.

- 46 **GRANDJEAN, P. HENRI, Chaurdefonds**—Artist.

An engraving on gold—refuge after shooting, and landscape.

Copy of an engraving, printed in London in the year 1770, after an original picture in the possession of Mr. Bradford.

This kind of engraving is also applicable for watches, jewellery, &c.

- 47 **FISCHER, JOHN CONRAD, Schaffhausen.**

View of the interior of the exhibitor's cast-steel and bar-iron foundry, in illustration of the method of making cast-steel, which differs in three points from that in general use in Switzerland; viz., the melting-furnaces are portable; they contain six crucibles, instead of only one or two; and

hot-blast is employed to produce an intense degree of heat scarcely obtainable by high chimneys and a simple draught of air. By this process it is stated that, with 120 lbs. of coke, 126 lbs. of steel may be melted, thus effecting a considerable saving of fuel.

Ingot of meteor steel, a kind of steel invented and named by the exhibitor in 1825: the upper part of this ingot exhibits a fine specimen of crystallization. An ingot, of which a part has been cut off in a transversal direction, to show the interior crystallization, as well as its density and purity. Four bars of the same steel exposed to the action of acids, to discover their damask: the quality may be estimated from the aspect of the grain at the end of each bar.

Two daggers and four razors, of meteor steel, which, with the exception of one, have been put into an acid, to discover their watering, and to show their polish.

Ingot of Swiss iron, converted by direct fusion into very soft cast-steel: part of this ingot is tilted out for a rifle-gun, flattened at the top into a bar of nearly three-eighths of an inch thick, and bent to show its tenacity. Ingot of English scrap-iron, converted by direct fusion into good cast-steel. The butt-end of the ingot, when tilted out into a box, was broken off, to show the grain, hardened and unhardened. This steel is particularly adapted for files.

Gear-wheel, cast in sand, of the same scrap-iron, converted into cast-steel.

Two crucibles, with their lids, differing in form and composition from the ordinary ones: in one of them, bar-iron has been melted.

Two small ingots, consisting of two parts of scrap-iron and one part of copper; showing that these two metals may be united, and that a useful and cheap alloy is thus obtained.

- 48 **LAUTERBURG, FREDERICK, 16 Rue de l' Arsenal, Berne**—Producer.

Impermeable mineral mass, exhibited for its peculiar properties.

Specimens of it, in the construction of linen, cord, packing-paper, pasteboard, and water-proof paper-boxes. This substance remedies the inconvenience caused by wet or humid walls; if the mortar be still sound, such walls may be covered with it, or painted with oil or glue colours. It may be employed for painting upon wood, ships, bridges, ropes, papers, and linen, to which it adds particular flexibility; it is likewise also stated to protect iron and other metals from rust.

- 49 **PEDOLIN, PIERRE, Chur**—Manufacturer.

Soap-stone, or steatite, exhibited for colour and purity. Powder of same stone, used in paper-mills, for cosmetics, &c.; small quantities reduce the friction in machinery. Steatite is also useful for stoves of superior quality. Polishing stone, of very fine grain. Marbles of various colours; some of them rare.

- 50 **GWINNER, JAMES, Berne**—Manufacturer.

Water-colours, best quality. Tin pallet, with small tin boxes, containing soft colours. Assortment of large and small cakes of water-colours.

- 51 **SOUTTER, GABRIEL, Campagne des Lugeon, near Morges.**

Tooth-powder, prepared from an indigenous calcined stone, much used in Switzerland.

- 52 **BAUP, H., Vevey, Canton of Vaud**—Inventor.

Beef, mutton, veal, and fish, preserved in their natural state, without other substances. Quarter of beef, preserved since 1846, and exposed to the variations of temperature and humidity of the open air during that period, without undergoing any change. Fish of the same. This method of preserving is easy and economical, may be adopted in all seasons and in any part of the world. Before making use of the preserved meat, &c.,

necessary to soak it in water for a certain time in order that it may resume its natural properties.

53 ROTH, JACOB, *Wangen, Canton of Berne*—Proprietor.

Horse-hair, black intermixed with grey; bullock's-hair (Swiss), flaxen; and (Brazil), white; horse-hair (Brazil), black; (Swiss), black; and white.

54 FOGLIARDI, G. B., *Melano, Canton of Tessin*—Proprietor.

Raw silk, spun on a new system; exhibited for its equality, strength, and elasticity.

55 LAUE, ELIZA, *Wildeg, Canton of Argovie*—Producer.

White and yellow raw silk, reeled; cocoons of silk.

56 LENDENMANN, T. CONRAD, *Trub, near St. Gall, Canton of Appenzell*—Manufacturer.

Gelatine from bones, for stiffening silks, and clearing wines.

57 STERN, ABRAHAM, *Gunten, near Thoune, Canton of Berne*—Producer.

Wood, hard and soft, adapted for musical instruments, produced in the canton of Berne, and exported to France for the manufacture of pianos.

58 LEDOUX, AUGUSTUS, *Geneva*—Inventor.

Frame of a double lithographic press, raising indifferently either on the right or left, thus avoiding the return of the carriage after the drawing of the first copy. This frame is adapted to the lithographic press of English construction.

59 SCHILT, V., *Soleure*—Inventor and Manufacturer.

Calculating machine, applicable for the performance of addition with ease and accuracy. In its use, the instrument is first set in motion by lowering the knobs which are fixed to the small box till they stop, and then allowing them to come up again, then by pressing on the several parts marked with numeral figures, on those of them intended to be added together, their sum will be shown at the upper opening. The inside of the machine may be seen by removing the screws and iron plate underneath the box, but none of the other screws should be touched.

60 BOELSTLER, JOSEPH, *Arau, Canton of Argovie*—Manufacturer.

Improved machine for cutting bread. The knives (of English cast steel) are screwed so as to be easily taken off and fitted on again. One person with this machine can cut bread for 150 persons in an hour. Many of these machines are manufactured for the Swiss barracks, inns, hospitals, boarding-schools, &c.

61 DARIER, HUGUES, *Geneva*.

Press for cutting out and stamping; it has been in use for several years. Specimen of watch hands, as they leave the stamp, produced by this instrument.

62 SCHELLING & Co., *Horgen, Canton of Zurich*—Manufacturers.

Sheets for cotton carding, and for sheep wool. Pillets; cotton pillets. Leather cards.

63 STOTZER, FREDERIC, *Buren, Canton of Berne*—Manufacturers.

Files of various kinds used for clock-making, with a numerous assortment of polishing instruments in steel, the whole inclosed in a round frame.

64 PAGAN, FRANCIS, *Geneva*.

Tools for engraving landscapes, flowers, zones, and other ornaments on watch-cases and gold dials. Burnishers. Punches; punches in relief. Polishing chisels. Tracers.

Four ivy leaves; two oak leaves. Six various leaves. Two flower works. Four tools for engraving blades of grass. Three hollow tracers; one double relief tracer. Four tools for engraving the bark of a tree. One tool to designate towns on maps, painted on watch-cases. This tool produces a drawing which can be easily seen when the piece is enamelled.

65 LAUE, FREDERIC, *Wildeg, Canton of Argovie*—Inventor and Manufacturer.

A new patent boring apparatus for artesian wells, consisting of boring tubes supplied with a valve-auger, by which, during the process, the mud produced by the borer is removed by penetrating into the tube. By this means the auger is preserved from fouling. The use of this apparatus is shown in combination with thin poles, on a smaller scale. This apparatus was employed for boring to a depth of 1,300 feet in the Jura.

[Perpendicular borings in the ground for water are called Artesian wells (*Puits Artésiens*), from the circumstance that they were first used in the district of Artois, in France. Their character will be best understood from a diagram. Here A is the surface soil of the district, to



which a water supply is desired; *a a* is a thick mass of rock or clay, through which the water finds its way with difficulty. Below this exists a sandy, gravelly, or other pervious stratum *b b*, which extends under the district, and coops out in some distant hills. This is the case with the chalk formations of the metropolis. *c* is an artesian boring through the superincumbent mass, through which the water rises to the surface and overflows, this being due to the pressure of the water in this basin. Artesian wells are now of very common occurrence, and although thought to be of recent construction, they appear to have been long known in Italy and in Artois, and probably to the ancients. Niebuhr, quoting from Olympiodorus, writes, "wells are sunk in the Oases, from 200 and 300 to 400 yards in depth (the yard being equal to half a foot), whence the water rises and flows over."—R. H.]

66 KAPP, CHARLES HENRY, *Lausanne*.

Long bows for ladies and gentlemen, made of laburnum (or cytisus tree) of the Jura, the grasp in amaranth velvet, adorned with silver. Bow for gentlemen, which can be taken to pieces; the moveable part is ornamented, the grasp is in iron covered with satin. Bows with simple strings (fillets), ornamented. Case containing arrows, remarkable for the numerous pieces of wood, of different colours, of which they are composed. One is composed of 1000 pieces of common wood.

67 PETER, JEAN, *Geneva*.

Double-shot gun, single barrel, and with loads placed over one another. A single trigger suffices to discharge two shots in succession, an arrangement of value in quick shooting.

68 SAUERBREY, VALENTIN, *Bâle*—Manufacturer.

Swiss rifle, cast-steel barrel, patent screw; ornamented with history of William Tell. Leather case, ramrod and cleaning rod of whalebone. Walnut case with necessary instruments.

[The fire-arms of Switzerland are highly esteemed, more

for their precision and solidity, than for their beauty; indeed, the excellence of those made in the factories of Bâle, Schaffhaurem, Zurich, Aarau, Berne, Vaud, Geneva, and many other cantons, cannot be surpassed. The superiority of the Swiss riflemen, is in a great measure owing to the excellence of their weapons. Although possessing numerous fire-arm manufactories, the more common sort are imported from Belgium, France, and England.—D. C.]

69 VANNOD, JOHN, *Lausanne*—Manufacturer.

Improved rifle, with apparatus. The touch-hole is placed on the left side.

70 CHOLLET, SAMUEL, *Moudon*—Proprietor.

Aromatic caoutchouc. Pitchfork with four points; of middling size; and little. Rakes for hay-making. Scythes

with handles. Pitchforks, middling size. Godet, with stones for sharpening scythes. Knife for vine-pruning.

71 DESTRAZ, LEWIS, *Moudon*—Manufacturer.

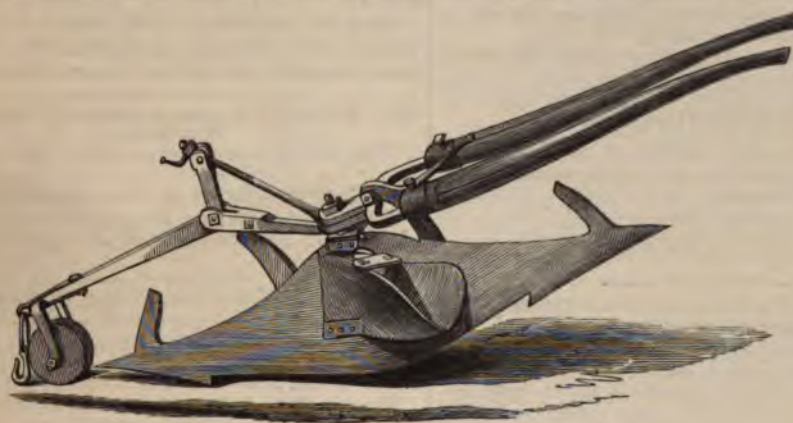
American rifle, with apparatus.

Barrel-churn; a form with large discs. Milk-can. Large milk-bucket. Tub for milking cows. Butter-mark, bearing the English arms. Bee-hive.

72 GISIN, JOHN, *Liestal, Bâle*—Inventor and Manufacturer.

Patent iron plough, which unites the two systems of the swivel and common ploughs. The plough can be used like the common plough, though having a peculiar screw; and like the common Scotch or Flemish plough, with equal advantage.

This plough is represented in the annexed cut.



Gisin's Patent Iron Plough.

[In the manufacture of agricultural machines, Switzerland, comparatively speaking, is much in advance of her neighbours; many of the cantons manufacture machines on the latest and most improved models. She likewise possesses a few forges for the manufacture of iron-ware, such as scythes, shovels, &c., but not in sufficient quantity to supply the demand, part being imported from France and Germany.

Carts and waggons are generally of good quality, particularly those made at Geneva for exportation. The wood and iron-work is considered to be of first-rate material. The cotton trade of Switzerland being of considerable importance, we find from those cantons where it most flourishes, numerous workshops for the manufacture of weaving and spinning, and hydraulic machines. Some of the larger firms excel in steam-engines, and the building of iron steam-boats, some of which are exported. The principal machine manufactories are those of Zurich, Berne, Soleure, Bâle, St. Gall, Argovie, Thurgovie, Genève, and Vaud; one of the manufacturers of Zurich employ no less than 600 workmen.—D. C.]

73 AUBERT, L. AUGUSTUS, *Lausanne*—Manufacturer.

Gold watch, shortened lever-escapement, scale-balance compensation, cranked-spiral, independent seconds hand, composed of one single wheel, put into motion by the watch itself, without having a barrel striking the seconds from the centre.

74 BARON & UHLMAN, *Geneva*.

Cylinder watches, four holes jewelled, gilt copper case, and gilt metal dial; the same in silver case, and with gold plated rims, enamelled dials: the same with gold case,

silver dials, and gold numbers; and the same with eight holes jewelled, enamelled gold case, and enamelled dial. Patent watches, outside and inside gold cases, enamelled dials, thirteen holes jewelled.

75 DAGUET, THEODORE, *Soleure*—Manufacturer.

Flint-glass and crown-glass rectangular prisms.

Unpolished discs of flint-glass, diameters from 4 to 15 inches. Crown-glass unpolished discs, diameters 4 to 6 inches. These glasses are all for optical uses. The flint-glass is composed of an amorphous silicate of lead and of potash; the crown-glass of an amorphous silicate of potash and lime.

[The term flint was applied to glass, from it originally being made of calcined flints, and it still retains the same name, although the use of white sand has superseded the use of flints. It is that fine glass of which the most valuable articles in domestic and ornamental use are made. Crown glass differs in its composition from flint, in containing no lead, or metallic oxide, except manganese, and which is used for correcting its colour. It is used for the best window glass, and is much harder than flint glass.—R. E.]

76 DARIER, HUGUES, *Geneva*.

Samples of watch-hands and key-pipes; the edges are as they come out of the stamp.

77 DU COMMUN GIROD, FREDERICK WILLIAM,

Geneva—Manufacturer.

Musical boxes, carved and marquetry.

78 ELFROTH, DAVID H., *Geneva*—Manufacturer.

Pen-holder watch, with a horizontal escapement, eight

ruby holes, which goes thirty-two hours, showing the hour, day of the week, and day of the month. It is wound up and set to time without a key, by the small buttons on the outside, and regulated by the index at the end. As the narrow space does not allow many wheels, this has one less than the usual number, and it has no barrel; it is set in motion by a worm-spring in the holder.

79 FATIO, JUNOD ALPH., *Geneva*—Manufacturer.

Gold watches, l'epine mechanism, free escapement, and lever spring, thirteen rubies, compensated balance-wheel, copper-inlaid wood and scale case, and a gold key.

Gold watches, with a double case, l'epine mechanism, cylinder escapement, eight rubies, a scale case, gold key, Turkish dial, and a Roman dial.

80 FELCHLIN, CHARLES, *Berne*—Manufacturer.

Bass clarinet, of improved construction, made of box-wood, inlaid with ivory, having 17 brass keys, the nib of grenadille wood the binding plated.

Boxwood clarinet (C. B flat), inlaid with ivory, 13 plated keys, improved construction, with two nibs, and plated binding, in a case. Ebony flute, inlaid with ivory, silver groove, 10 plated keys, in a case.

[The basset horn, bass clarinet, or English horn, is little known in this country. It was invented in 1770, by Theodor Lotz, of Presburg. It is a common practice in Germany to have two hole pieces of different lengths for the same clarinet; hence the description C B flat.—H. E. D.]

81 HOMMEL-ESSER, FREDERIC, *Aarau, Canton of Argovie*—Manufacturer.

A complete case of mathematical instruments, made of German silver and English steel. The compasses open with a peculiar and equable movement, and the workmanship of all the joints, screws, &c., adapt them for describing small circles, &c., accurately. The drawer at the bottom is for the reception of India ink, colours, pencils, &c.

Pair of pocket compasses, of fine German silver and English steel; open in a case to show the construction.

[The study of mathematical and physical sciences are much pursued in Switzerland, and many of the cantons deservedly enjoy a high reputation for the manufacture of optical and physical instruments, especially those of Aarau, Geneva, and Zurich. There are many eminent mathematical instrument manufacturers in the Canton of Argovie, whose instruments are much sought after, for their beautiful finish and moderate price.

Almost all the towns of Switzerland possess workshops for the construction of musical instruments. Pianos and other instruments are exported. The trade in musical boxes is special to the watch-making cantons. Geneva and the small town of St. Croix, in the Canton of Vaud, are the principal seats of this trade.—D. C.]

82 FREY, ADOLPHE J. G., *Geneva*—Manufacturer.

Two upright trichord rosewood pianofortes, one with oblique strings, seven octaves, and metallic hammers.

83 GAY & LUQUIN, *Geneva*—Inventors.

Complicated musical box, imitating a military band, plays six modern tunes, the barrel is nineteen inches long, and three inches four-tenths in diameter; it contains also harmonic tones, a drum, two castanets, twelve small bells, and a large drum, which are not seen; with a carved box and moveable glasses.

84 GOLDSCHMID, JAMES, *Zurich*—Manufacturer.

Planimeter, by M. Wettli, for calculating mechanically the area of planes, whatever may be their figure.

85 GISEL, F., *Aarau, Canton of Argovie*—Manufacturer.

Complete case of mathematical instruments of the finest quality, made of German silver.

86 HUEBSCHER, CHRISTIAN, *Schaffhausen*—Manufacturer.

Bugle trumpet, with cylinder valves. Trumpet in C, with same valves.

87 HUENI & HUBERT, *Zurich*—Inventors and Manufacturers.

Patent harpsichord pianoforte, of peculiar mechanism, based upon a calculation of the spring tension: the number of parts to a key are reduced to 26, by which means the touch is said to become more elastic, and the sound fuller.

[Harpsichords are provided with quills in place of hammers to sound the strings. The pianoforte was first invented by Christopher Gottlieb Schröter, 1684. The dampers were introduced by Leucker, 1765. The first square pianoforte was made by Wagner, 1774.—H. E. D.]

88 KERN, JAMES, *Aarau, Canton of Argovie*—Manufacturer.

Mathematical cases of German silver; and of brass.

89 KUEZING, CHARLES, *Berne*—Manufacturer.

A grand pianoforte; the wrest and hitch-pin blocks are of iron, which increases the sound, and renders the tuning more permanent.

90 LECOULTRE BROTHERS, *Brassus, Canton of Vaud*.

Musical box, plays four overtures, with two key-boards. Musical pianoforte, plated box, inlaid work, and glass.

91 LEUBA, HENRY, sen., *Bâle*—Manufacturer.

Two travelling clocks, furnished with an alarm, &c.

92 GOLAY-LERECHÉ, AUGUSTUS, *Geneva*.

Pocket chronometer with repeater and thermometer, gold hunting case; this chronometer possesses a stop in the balance-wheel to take accurate time. This stop, the key of which is placed under the cover of the case, to prevent its moving accidentally, is so arranged as to stop at once the balance-wheel without danger to its pivots.

[It requires some experience to note the exact time at which any phenomenon takes place, but certainly the best plan of doing this, is that adopted by astronomers, who take a second from their clock, and count the beats by the ear, while the eye observes the object of observation, and by this way, the time of any phenomenon is noted to a small fraction of a second. Stop-watches are intended for inexperienced observers, and such watches have usually a large seconds-hand upon the dial, which is stopped with more or less accuracy, by pressing some part of the mechanism, at the moment the phenomenon is observed.—J. G.]

93 LOMBARD-JANPEU, CHARLES A., *Geneva*.

Wooden leg, used either for amputation below or above the knee; with girdle and straps.

94 LUTZ, —, sen., *Geneva*—Inventor and Manufacturer.

Hair springs, exhibited for their elasticity and tenacity. Hair springs, specially suited to marine and other chronometers. Hair springs, intended to resist the effect of heat and cold in altering their shape.

95 MASSET, LOUIS, *Yverdon, Canton de Vaud*—Inventor and Manufacturer.

Patent planetarium, accompanied by a new method of explaining astronomical phenomena by the real motions of the planets, without reference to their apparent motions.

The sun, the earth, and the moon are put into motion by an arrangement of wheels, which serve to regulate their motions, so that the sun is made to revolve on his axis in 25½ days; the earth performs her revolution in 365 days, and the moon in 27 days. A lamp or taper may be fixed in the place of the sun to represent the effects of solar light.

96 **MERCIER, S., Geneva**—Inventor and Manufacturer.

A chronometer, having a spring escapement, jewelled, compensation balance, face enamelled, gold case, engine-turned.

Half chronometer, for the use of the deaf and blind, being a new invention, with spring escapement, mounted and jewelled, compensation balance, enamelled face with seconds, gold hunting case; the watch to be wound up, and to be set to time on the top of the ring.

Watch, with Mercier's free escapement, a new invention, enamelled face, gold case, &c.; watch, with cylinder escapement, jewelled face, enamelled gold case, with blue enamel on the back, and a painted group of flowers. Watches, Louis XV. à la renaissance; gold cases, with enamelled backs, &c.



Bracelet, set with pearls, and small watch-ring, with fine rubies.

[Watch-cases are usually painted on the opaque white, and a flux of glass is afterwards fused over the painting. Small devices for jewellery are also painted on the opaque white.—J. H.]

97 **METERT & LANGDORF, Geneva**—Manufacturers.

Musical boxes, playing six tunes, with bells and drum at pleasure, ebony and black cases; musical boxes playing four tunes, mandoline, black case, all with metallic incrustations.

98 **MEYLAN-GOLAY, H., Geneva.**

Gold watch, striking the hour and quarters, and repeating when wanted, with duplex escapement, all the holes in rubies and thirteen jewels, compensation balance, the whole mechanism is exposed to view, face enamelled, with seconds, and the back engine-turned.

99 **PATEK, PHILIPPE, & Co., Geneva**—Inventors and Manufacturers. *Vide* No. 274.

100 **PUPUNAT, F. H., Lausanne**—Manufacturer.

Two violins, the vaults made after a new system; two violin bows. Violoncello, on the same system as the violins.

Different parts of a violin, for explaining the maker's improvements.

101 **RETOR, FRANCIS, Geneva**—Inventor and Maker.

Chronometer. New strong detached lever-escapement; the regulator is independent of the body of the wheel-work, in order to avoid the effects of oxidation, &c.

102 **SCHNEIDER, FREDERIC, Berne**—Proprietor.

Relievo, representing a view of the Jungfrau, taken from the Wengern alp, in the Bernese Oberland.

Artificial teeth, with enamel, natural hippopotamus-ivory teeth, mounted in gold, &c.

103 **SPECHER & BAER, Zurich**—Manufacturers.

Pianoforte, in the finest and most durable woods of Switzerland; exterior, nut-wood, ornamented in the style of the middle ages. The peculiarity of the mechanism is in a continual escapement, producing precision of touch, and power of tone.

104 **JACCARD, LEWIS—Lausanne.**

Convex and biconcave glasses for cataract. Periscopic, convex, and concave glasses. Cylindrical magnifying glasses, in crown glass, made by Mr. Daguet, at Soleure; and in French crystal.

105 **PAQUET-FAZY, Mde., Geneva.**

Watch spiral springs, made of the best English steel.

106 **JUNOD, THEODORE, Lausanne**—Maker.

Cupping apparatus.

107 **WERMUTH, JOHN, Signau, Canton of Berne**

—Producer and Proprietor.

Osteotome (a surgical instrument).

[The principal manufactories of fine cutlery are those of Argovie, Schaffhausen, Vaud, and Geneva. The cutlery of Aarau is held in high estimation, and is exported in considerable quantity. Schaffhausen has several factories of military-arms, edge-tools, and razors, made of a particular steel, called "acier météorique." The Canton of Vaud is noted for cutlery, especially razors. Many of the cantons are held in high repute for the manufacture of files, edge-tools, and surgical instruments.

Common cutlery and edge-tools are imported to Switzerland from England, France, and Germany.

Instruments for engraving and chasing are exported from Geneva and Neuchâtel.—D. C.]

108 **ZIEGLER, HENRY, Winterthur, Canton of Zurich**—Proprietor.

Machine for measuring the distance of gun-balls from the centre.

109 **ALDER & MEYER, Herisau, near St. Gall, Canton of Appenzell**—Manufacturers.

White embroidered muslin for ladies' dresses.

Embroidered curtains, long stitch on net foundation, coloured.

White muslin, embroidered stare au crochet, and other curtains.

Bed-cover, embroidered; muslin, half-silk, broché in colours; and with flowers.

Cravats, coutil plain, coloured; with silk borders; and broché with silk.

110 **ALTHER, JOHN CONRAD, Speicher, near St. Gall, Canton of Appenzell**—Manufacturer.

Various articles in muslin embroidered with cotton, chenille, &c. Muslin, embroidered with coloured wool.

111 **ANDEREGG, TOBY, St. Gall**—Manufacturer.

Ginghams, jaconet; fine cambric; and figured cambric. Jacket stuffs. Cotton satin. Cotton nankin. Cottonade, solid.

Shawls, figured fine, with wool fringes; tartans; chinés; figured cotton fringes.

Pocket-handkerchiefs, coloured in fast colours.

Paris jaconet. Nainzooks. Jaconet, batiste stiffening. Superfine cambric, without stiffening, for shirts, &c.

112 **BAENZIGER & Co., St. Gall**—Importers.

Muslins, plain, white, checked, coloured, embroidered, striped, figured, &c.

Balzorines, printed. Cravats.

- Shawls, white and figured, coloured, embroidered; and with needle-work and tambour-work.
Ladies' dresses, with jacquard-work, woven needle-work, white-embroidered, coloured, &c.
Curtains, embroidered with needle-work; and jacquard-work.
Embroidered ladies' handkerchiefs, printed handkerchiefs, &c.
- 113 BEUGGER, JOHN, *Wülflingen, Canton of Zurich*—Manufacturer.
Ropes of cotton-yarns, bobbins, "chain" (*warp*) and wool.
- 114 BLUM, THOMAS GEORGE, *Winterthur, Canton of Zurich*—Manufacturer.
Parcel of cotton-yarn.
- 115 BOESCH & SONS, *Ebnat, Canton of St. Gall*—Manufacturers.
Muslin gingham; the same, with jacquard. Small gingham. Cottoline d'Origon. Gingham, striped, satined, &c.
Long shawls, with jacquard. Verona handkerchiefs. East Indian handkerchiefs, dyed, red and blue, red and green. Handkerchiefs, &c.
Cravats, French cambric. Scarfs.
Shawls, Barège, gauze-coloured, and fringed.
Muslin, striped, twisted, thread, &c.
Barège, with and without flowers; jacquard-dyed; the same, with jacquard-striped, dyed.
- 116 BLUMER & IENSY, *Schwanden, Canton of Glaris*—Manufacturers.
Cotton, muslin tasmans, and jaconet tasmans, printed handkerchiefs. Handkerchiefs.
Chintz, cotton damask. "Kaiupaujaugs."
BREITENSTEIN, JOHN, & Co., *Zofingen, Canton of Argovie*—Manufacturers.
Cottons for ladies' dresses; and aprons. Table-cloths, bleached.
Pocket-handkerchiefs, half-linen; and bordats for children, cotton.
- 118 BRUDERER, JOHN, *Taufen, near St. Gall, Canton of Appenzell*—Manufacturer.
Robes (dresses), plain muslin for corsages.
Tablier, plain white muslin, coloured, embroidered, amarantes.
Volans. Plis, with border and lace applied. Plis, &c.
- 119 BRAENDLIN BROTHERS, *Rapperschwyl*, and HURLIMANN, JOHN, *Richterschwyl-Uznach, Canton of St. Gall*—Manufacturers.
Three large ropes of cotton "chain" (*warp*) spun from Egyptian mats.
- 120 BUEHLER & SONS, *Rollbruner, Winterthur, Canton of Zurich*—Manufacturers.
Cotton-yarn.
- 121 CLAIS (VON), CHARLES SEBAST., *Winterthur, Canton of Zurich*.
Specimens of cotton yarn "chain" (*warp*).
- 122 FEHR, J. C., *St. Gall*—Manufacturer.
Jaconet, coloured-ground, with plain stripes.
Gauze, white ground, with coloured satin stripes; and coloured ground, figured in white; and white ground, à la Jacquard.
Muslin, white ground, with figured stripes; white ground, woven in colours à la Jacquard; and figured with the needle; muslins, variously made and embroidered.
Bobbinet shawl, with white-tamboured embroidery.
Muslin dress, white-tamboured knitted embroidery, with two folds.
Muslin dress, white embroidery, with coloured glass beads, with tunic.
- 123 GREUTER & RIETER BROTHERS, *Winterthur, Canton of Zurich*—Manufacturers.
Turkey-red printed calicoes, several colours; and union croisé, Jacquard weaving.
Handkerchiefs, Turkey-red, and printed in five colours.
[The Swiss possess about 250 dyeing factories for thread and woven stuffs. The Turkey-red dyeing establishments are of great renown, and the Canton of Zurich alone reckons fourteen. The Cantons of St. Gall, Glaris, and Thurgovie are likewise held in high repute for their dyes in red and other colours. These factories produce large quantities of goods for exportation.
In the Canton of Neuchâtel, the manufacture of printed cottons dates from the middle of the eighteenth century, where it once considerably prospered, but of late years has much diminished, and now reckons only two establishments.—D. C.]
- 124 HEINIGER, JAMES, *Berthoud, near Berne*—Manufacturer.
Cotton canvas and fine Java, coloured and striped.
Canvas made from a new material used in the carpet manufactures.
- 125 HUERLIMANN, JOHN, *Richterschwyl, Canton of Zurich*—Manufacturer.
Red and brown printed chintz, with six colours, for curtains, &c.
Jaconets, with five colours, for ladies' dresses, &c.
Muslin, of one colour.
- 126 IMHOOF, BRUNNER, *Winterthur, Canton of Zurich*—Manufacturer.
Specimens of cotton-yarn "chain" (*warp*).
- 127 IMHOOF, BRUNNER, & Co., *Winterthur, Zurich*—Manufacturers.
Specimens of muslins.
- 128 KUNZ, HENRY, *Uster, Canton of Zurich*—Manufacturer.
Yarns, twists, &c. Thread for ribbon manufacturing; sewing thread; dyed sewing thread upon bobbins; woollen cloth.
- 129 LAUTERBURG, J., & Co., *Langnau, Canton of Berne*—Manufacturers.
White drill, cotton and thread; cotton only; and mixed coloured.
The white drill is made of Swiss thread, bleached before being woven, and without any preparation.
- 130 LEUMANN BROTHERS, *Mattweil, Canton of Thurgovie*—Manufacturers.
Assortment of Turkey-red dyed cotton yarns of different numbers; the same fast rose.
- 131 NAEF, MATHIAS, *Niederutgwyl, Canton of St. Gall*—Manufacturer.
Moreas, half cotton; luting, satined; Jacquard; hakirs; gingham, &c. shawls for negro women.
- 132 RIETER, T. J., & Co., *Winterthur, Canton of Zurich*—Manufacturers.
Cotton yarn; specimens of bancs-à-broches preparation.
- 133 RIKEL, A. F., *Wangen, near Berne*—Producer.
Spun cotton, dyed red. Exhibited for durability and colouring.
- 134 SCHIESSER, GABRIEL, *Hard, near Zurich*—Manufacturer.
Handkerchiefs printed on both sides.
- 135 SCHLAEFFER, JOHN, *Herisau, Canton of Appenzell*—Manufacturer and Importer.
Plain muslin.

- 136 **SCHMID, HENRY**, *Gattikon, Canton of Zurich*—Manufacturer.
Cotton yarn "chain" (warp) and woof.
- 137 **SCHWARZ, H.**, *Rickon, near Winterthur, Zurich*—Manufacturer.
Specimens of cotton yarn.
- 138 **SPRINGER, J. J.**, *Schaffhausen*—Importer.
Hand-spun yarn.
- 139 **STURZENEGGER-NEF, L.**, *St. Gall*—Manufacturer.
Printed cravats on jaconets; jaconets, steam-dyed, &c.
- 140 **VONWILLER, ULRIC DE GASPARD**, *St. Gall*—Importers.
Plain white tarlatan and plain white muslins, manufactured by Ramsauer Aebli, and Messrs. Tribelhorn and Maier.
Fancy muslin dresses; figured muslins; figured and spotted muslins; spotted jaconets; white figured dresses, made by loom; white tambour embroidered muslins, figures and spots; and in colours, all cotton, Persian and Levantine style of designs and colours, made by hand.
Insertions (cotton) by loom; embroidered insertions, by hand; embroidered bands.
Collars, all cotton—pocket handkerchiefs, all cotton, manufactured by M. J. Qüst and Sons. Pocket handkerchiefs of real batiste linen, made by hand.
Embroidered collars and veils for mourning, silk on crape ground, made by hand, manufactured by M. J. H. Wieser.
- 141 **WALTY BROTHERS**, *Schöftland, Canton of Argovie*—Manufacturers.
Silk handkerchiefs, cravats, cords, &c.
- 142 **WINKLER, THOMAS C.**, *Friedthall, Canton of Zurich*—Manufacturer.
Cotton yarn chain (warp).
- 143 **ZÄHNER & SCHIESS**, *Herisau, Canton of Appenzell*—Manufacturers.
Tarlatan, croched; muslin curtains; muslin nets; batiste handkerchiefs, embroidered.
- 144 **ZELLER, HENRY**, *Zurich*—Dyer.
Spun cotton, solid Turkey-red dyed.
- 145 **ZELLWEGER, SALOMON**, *Trogen, Canton of Appenzell*—Importer.
Jaconets, woven from Swiss-twist, stiffened by Mayer and Fröh Herisau.
- 146 **ZIEGLER, T., & Co.**, *Winterthur*—Manufacturers.
Merinos, prints, cotton, and yarns red dyed.
- 147 **BILLETER, ZUPPINGER**, *Herzogenmuelle, Zurich*—Manufacturer.
Specimens of cotton yarn.
- 148 **CUSTER & SCHACHTLER**, *Alltalden, Canton of St. Gall*—Manufacturers and Importers.
Orleans quadrillé; façonné, and broché; half silk broché.
- 149 **ERNST, FERDINAND**, *Winterthur, Canton of Zurich*—Manufacturer.
Mixed coloured cassinets, for gentlemen's summer dresses.

- 150 **KELLY, J. J.**, *of Mettendorf, near St. Gall*—Manufacturer.
Turkey-red cloth.
Turkey-red prints, four colours; one and two colours; and various colours; for clothing or furniture.
- 151 **MUELLER, PLUESS, & Co.**, *Zofingen, Canton of Argovie*—Manufacturers.
Merinos of fine and common wool. Tartans, half wool. Milaine uni. Poil de chevre, half wool.
Sicilienne, half wool; striped silk, half wool.
Ecosaise, one-third wool. Berlines, half wool.
Cassinets, half wool. Stokinets, half wool.
Damier, half wool; pointille, half wool. Etoiles, all cotton.
[The Swiss possess about 500,000 sheep, of which the wool is considered to be of medium quality. She purchases more wool than she exports; Hungary, Bavaria, Wurtemberg, and the Grand Duchy of Baden, supplying annually about 12,000 quintals of raw wool.
The cloth trade was formerly of considerable importance in Switzerland, but at present she consumes more than she produces. The Zollverein States import annually woollen cloths to the value of 20,000,000 francs, France 10,000,000 francs, and Austria 1,500,000 francs. They manufacture the coarser and stronger cloths in considerable quantities, and a material called *half-cloth*, composed partly of wool and cotton. The principal cantons of this manufacture are Zurich, Berne, Lucerne, Uri, Schwitz, Unterwald, Bâle, Grisons, Tessin, Vaud, Valois, and Neuchâtel.—D. C.]
- 152 **THE SWISS MANUFACTURERS OF SILK RIBBONS.**
Twenty-one glass cases, containing 2,814 specimens of ribbons, from the following Manufacturers:—
Koechlin & Sons, *Bâle*; F. Feer & Co., *Aarau*;
H. A. Senn & Suter, *Zofingud*; Waldner & Staehelin, *Bâle*;
Jean François Sarasin, *Bâle*; Dietrich Burckhardt, *Bâle*;
B. di B. Staehelin, *Bâle*; Goetz & Ecklin, *Bâle*;
Sulger & Stueckelberger, *Bâle*; T. T. Bakofen & Sons, *Bâle*;
Buxtorf & Bischoff, *Bâle*; Freyvogel & Heussler, *Bâle*;
Freres Bischoff, *Bâle*; Emanuel Hoffman, *Bâle*;
T. F. & T. Frey, *Aarau*; M. Oswald & Co., *Bâle*;
Charles Ryhiner, *Bâle*; Frey Thurneisen & Christ, *Bâle*;
Lui. Preiswerck, *Bâle*; T. B. Burckhard & Sons, *Bâle*;
Siber Bischoff, *Bâle*; D. Preiswerk & Co., *Bâle*;
Richter Linder, *Bâle*; Soller & Co., *Bâle*;
T. De Bary & Bischoff, *Bâle*; Sarasin & Co., *Bâle*.
[The manufacture of silk in Switzerland is extremely ancient, and dates many centuries back. It received a great stimulus at the period of the Repeal of the Edict of Nantes, when the cruel persecutions of the Protestants compelled a great number of French merchants to emigrate to Switzerland. From this epoch dates the prosperity of this branch of commerce, and at the present period forms one of the greatest sources of the affluence of the country. It is a remarkable fact that, notwithstanding the absence of protective duties, and even circumscribed by many of the neighbouring States by high protective customs, the silk manufacturers have succeeded by energy and industry in overcoming every obstacle.
Many of the cantons, especially the Tessin, the Grison and Geneva, are giving much attention to the production of raw silk, which is yearly pursued with greater success the raw material, however, at present principally comes from the Austrian States, Piedmont, and the medium importation is about 30,000 quintals.
The Canton of Zurich is one of 1

Switzerland, and the centre of the manufacture of silk-stuffs, and Bâle, that of ribbons. In both cantons, silks of the most elaborate kind, and beautifully finished, are manufactured; but they generally confine themselves to the more common and ordinary qualities. The Canton of Argovie, after Zurich and Bâle, is next in importance in this manufacture. The purity of the water in this canton appears to be instrumental in giving brilliancy of colour.

The silk manufactories of Zurich occupy part of the inhabitants of the adjacent Cantons of St. Gall, Zug, Schwitz, and Lucerne. There are about 150,000 looms, of which 95 per cent. work at home on plain and common stuffs, and 5 per cent. on figured silks and shawls. From 20,000 to 25,000 workmen are dependent on this branch of industry. The average returns are from 25 to 30 millions of francs per annum, varying according to the price of the raw material; 75 to 80 per cent. is about the cost; 20 to 25 per cent. is consumed in the process of dyeing.

The greater proportion of the weavers, men, women, and children, are occupied during the summer in the cultivation of their grounds, and take to the loom in winter and leisure hours.

The principal articles are the Florence and Marcelines, which are nowhere made to greater perfection. The weavers also excel in the manufacture of plain silk dresses for costumes, striped and watered silks. The glacé silks are considered to be of a very superior quality, being woven by first-rate workmen, who are paid high wages, and who, in other districts, apply themselves to the fancy stuffs.

The weaver, by the above system, is enabled during the slack season to maintain himself on his own piece of ground. Necessity makes him diligent and content, and luxuries are unknown to him.

The merchants and manufacturers are satisfied with small profits, and by a well-regulated system, economy, diligence, and business habits overcome the prejudicial effects of high duties, so injurious to the export trade. Since 1830, the exports have considerably increased, which is partially to be attributed to the superiority of their goods, and their rapidity in the execution of orders.

The improved machinery in the cotton manufactories has caused a great reduction in the number of hands, and has, no doubt, materially contributed to the increase of the silk trade.

There are some silk-stuff factories in the Canton of Bâle, but the staple trade of this town lays in the manufacture of silk ribbons. In this and the neighbouring Canton of Bâle-Campagne, there are about 4,000 looms, which give employment to 16,000 workmen, as weavers, dyers, &c. Manual labour is extremely cheap, enabling the manufacturer to sell at a very low rate. The principal part of the manufacturers of this canton employ their own capital, and have not to surmount those difficulties and disadvantages inseparable from the employment of borrowed capital. The medium annual produce of the manufactures of Bâle is about twenty millions of francs, part of which is imported into most European countries, America, and the Colonies. The principal articles of manufacture are plain taffeta ribbons, plain satin and figured ribbons: in all these articles, Bâle maintains an incontestable superiority.

The most cordial understanding exists between employers and employed, and the strikes and coalitions so injurious to other manufacturing countries are unknown

in Switzerland. There is no fixed tariff for the price of manual labour.

The silk trade in this country has grown and prospered without the aid of protective duties, and it is a remarkable fact that the difficulties occasioned by the high prohibitive customs of other States, instead of being prejudicial, have been of advantage, by increasing the active genius and emulation of the manufacturers, and inducing them to seek more distant and more favourable outlets for their goods. The morality, activity, and commercial knowledge of the Swiss may be considered the basis of their success in this most important branch of trade.—D. C.]

153 FORTY-TWO MANUFACTURES OF SILK STUFFS, Canton of Zurich.

Two hundred and eighty-four pieces of silk, in glass cases, consisting of Millorences, Florences, Marcelinettes, Marcelines, Taffetas, Lustrines, Gros de Florence, du Rhin, Lustre, de Suisse, Varié, d'Orleans, FAVORI, Poultz de Soie, Gros brillant, Serges, Grosses Cotes, Satins de Chine, de Prusse, Satins légers, forts, for waistcoats, armures, ottomanes, imperiales, velvets, unis, rayés et faconnés, fischus, brooches, cravates, in all qualities from the following forty-two manufacturers of the Canton of Zurich:—

Amann & Egli, <i>Thalweil</i> .	G. Forrer - Biedermann, <i>Winterthour</i> .
Jean Amann, <i>Thalweil</i> .	Hoch & Staebli, <i>Horgen</i> .
Baumann & Streuli, <i>Horgen</i> .	S. Rutschi & Cie., <i>Zurich</i> .
Salomon Escher, <i>Zurich</i> .	Stunzi & Fils, <i>Horgen</i> .
Robert Fierz, <i>Zurich</i> .	Rod. Klaus, <i>Uster</i> .
Wirz & Cie, <i>Zurich</i> .	Lussy & Cie., <i>Zurich</i> .
Huber-Rordorf.	Frères Schwarzenbach, <i>Rorschlikon</i> .
Hoch & Baumann, <i>Horgen</i> .	Stapfer-Kölla, <i>Staefta</i> .
Frères Meyer, <i>Zurich</i> .	J. J. Widmer-Huni, <i>Horgen</i> .
Naef & Schwarzenbach, <i>Thalweil</i> .	R. Zuppinger & Fils, <i>Mosandorf</i> .
Frères Neumann, <i>Zurich</i> .	Meyer & Cie., <i>Zurich</i> .
Frères Staub, <i>Horgen</i> .	J. Widmer au Kreutz, <i>Zurich</i> .
Les Fils de J. Stapfer, <i>Horgen</i> .	Brupbacher & Bleuler, <i>Zollikon</i> .
Auguste Gessner, <i>Wädenschweil</i> .	Stapfer, Huni, & Cie., <i>Horgen</i> .
Suremann & Cie, <i>Meilen</i> .	Noz & Diggelmann, <i>Zurich</i> .
J. J. Schwarzenbach, <i>Kilchberg</i> .	Hy. Brunner, <i>Zurich</i> .
Ryffel & Cie., <i>Staefta</i> .	Schmid & Abegg, <i>Küssnacht</i> .
Jacob Zurrer, <i>Hausen</i> .	Frères Sculthess, <i>Goldbach</i> .
Felix Zeller & Fils, <i>Hirslanden</i> .	Hy. Honegger, <i>Wollishofen</i> .
Zeller & Cie., <i>Balgrist</i> .	J. Kaegi-Fierz, <i>Küssnacht</i> .
Burkhard & Naegeli, <i>Horgen</i> .	J. J. Burgi, <i>Zurich</i> .

These silks are not sent to the exhibition as productions of art, but to show that plain silk goods can be made in Switzerland at a cheap rate, and that, with regard to quality and finish, they are equal in every respect to those of other countries.

154 ALIOTH, T. S., & Co., *Basle*—Inventors.

Samples of spun silk, called "schappe sublime," first quality, in warp and woof, for foulards, damask silk and wool, &c.

The materials employed are silk wastes, called "struin" in Italy, "moresques" in Piedmont, and "frisons" in France.

155 LOTZ, FREDERIC; WEGNER, T. R.; MULLER, HAUSER; ROMAIN, jun., *Bâle*—Silk-dyers.

Specimens of different shades of silk.

156 BAENZIGER, KOLP, & Co., *Ebnat, St. Gall*—Producers.

Madras handkerchiefs. Saxonies. Checks and stripes. Gingham.

- 157 **BISCHOFF, CHRIST. JOHN**—Manufacturer.
Fine black satin. Gros du Rhin. Serge.
- 158 **BORLGER, MARC, Bâle**—Manufacturer.
Specimens of spun silk, first quality; warp for furniture stuffs, wool for half-silk stuffs.
- 159 **CUENDET, ADELINE, Geneva.**
Scarf (points de Genève).
- 160 **MUELLER, T. B., & Co., Wyl, near St. Gall**—Manufacturers.
Handkerchiefs of various colours, simple and mixed. Romals, ordinary quality.
Shawls jacquard, damasked, double warp, various colours, &c.
Tartans, differently coloured. Scarfs, various colours. Gingham, of different qualities and colours.
Cachemirienne croisée, different coloured checks, lusted, &c. "Coretny" satins, red ground, façonné stripes, high lusted stiffening.
Moreas, first qualities, different stripes and colours. Demi-cottons. "Coretny" jacquard. "Hacking" Jacquard, style, gold stripes. Jaconet worked.
- 161 **RYHNER & SONS, Bâle**—Manufacturers.
Machine-spun silk, made of silk waste, for silk and worsted damask, handkerchiefs, gloves, &c.
- 162 **VON DER MUEHL BROTHERS, Basle**—Manufacturers.
Gros de Naples, four qualities. Serge. Taffetas. Gros de Rhine.
- 163 **BECK & SONS, MIESCHER & SONS, FANKHAUSER BROTHERS, SCHMID BROTHERS, Berne, Berthoud, and Eriswyl, Canton of Berne**—Manufacturers.
White linen, prepared and without preparation; white linen, extra thick; white linen pocket handkerchiefs.
Bleached table linen, with designs; assortment of 24 table napkins and table cloths; washing towels, all linen.
Drill tick, unbleached; cotton and linen tick, intermixed.
[Hemp is cultivated throughout Switzerland, and flax principally in the Cantons of Berne and Argovie. Flax mechanically woven, is a modern invention, of which there are only three establishments, those of Berne, St. Gall, and Zurich.
Belgium, France, and the Zollverein States, export annually to Switzerland, hemp and flax thread, to a considerable amount, and the total imports, taking a mean year, from abroad, is 1,500 quintals. The flax and hemp linen of Switzerland enjoys a deservedly high reputation.—D.C.]
- 164 **HAAG & SON, Libefeld, near Berne**—Manufacturers.
Samples of linen.
- 165 **HANSELMANN, JOACHIM, Güttingen, Canton of Thurgovie**—Manufacturer.
Morning jacket of fine Thurgovie linen. The manufacture of this article occupied the exhibitor from 600 to 700 days.
- 166 **HUNZIKER & Co., Aarau, Canton of Argovie**—Manufacturers.
Coutils, linen and cotton; toiles du nord, linen and cotton; cotonades; coutils, cotton; gingham; handkerchiefs.
- 167 **MIESCHER & Co., Berthoud, Canton of Berne**—Manufacturers.
Sewing thread.
- 168 **RASCHLE & Co., Wattwil, Canton of St. Gall**—Manufacturers.
Handkerchiefs:—Veronas, Madras, Indian, pailacate, mazzulipatams.
Cottonnets, caranclanes; the same, Modenchelasse, gingham, jacquard, mochares, cambrics, "lapeta," "ghulmess."
- 169 **ROETHLIBERGER & SONS, Walkringen, near Berne**—Manufacturers.
Bleached washing towels, table cloth, table linen, and table napkins.
Bleached linen, without preparation, for shirts and for bed linen.
Pocket handkerchiefs; linen drill, cotton and thread intermixed.
- 170 **REYMOND, —, jun., Morges**—Manufacturer.
Diapered skins. Articles of a currier's shop.
Calf-skin polished. Calf-skin part polished, part in white.
- 171 **GISSIGER, VICTOR, Laufen, near Bâle**—Manufacturer.
Dressed hides, black and brown, for harness, bridle, pouches, &c.
Curried shoe-hides; dressed hide, for coaches; calf-skins, russed; calf-skins, blacked or French-curried.
- 172 **HAUSER, J. de J., Waedenschwyl, Canton of Zurich**—Manufacturer.
Ox-hide, for sole leather, tanned with oak tan; exhibited for compactness and solidity.
- 173 **IMHOF, MELCHIOR, & SONS, Bâle**—Manufacturers.
Sole leather:—half hide of ordinary condition; the same, prepared or beaten; tanned from a raw ox-hide, in an improved manner, with oak bark: exhibited for consistency, impermeability, and solidity.
Calf-skins, black for shoemakers; French blacked and rounded; russed, for shoemakers; and French blacked.
Fine calf-skins, French blacked, for legs of boots, and for upper leather of boots.
Tanned goat-skins, with the hair.
- 174 **KAPPELER, FREDERIC, Frauenfeld, Canton of Thurgovie**—Manufacturer.
Half cow-hide, for sole leather, tanned.
- 175 **MERCIEZ, JEAN JACQUES, Lausanne, Canton of Vaud**—Manufacturer.
Calf-skins: tanned; tanned and curried; and tanned, curried, and blacked.
Morocco leathers; boot-legs, fronts and backs.
Chamois calf-skins and chamois sheep-skins, of various colours.
- 176 **MEYER & AMMANN, Winterthur, Canton of Zurich**—Manufacturers.
Calf-skin for cylinders. Grey and green calf-skin, for bookbinders.
Morocco, shagreened, red, violet, green, brown, and black.
Morocco, quarré red, violet, grey, and green.
Sheep-skin, of various kinds and colours.
- 177 **MUELLER & Co., Aarau, Canton of Argovie**—Manufacturers.
Calf-skins, curried, tanned, and "rounded."
blacked, waxed, and rounded.
- 178 **RAICHLER, LOUIS, Geneva**—Manufacturer.
Cow-hide, strong sole leather leather, for bands.
Curried calf-skins, black is exhibited for tenacity.
- 179 **REISSVURKER, Y**
Curried calf-skins, &c.

Cordovan, dyed in various colours.
Kid leather, dressed for gloves.

180 SCHALCH, A., *Schaffhausen*—Manufacturer.

Black English skins, for ladies' shoes.
Goat-skins, blue, violet, and red, for bookbinders.
Fine parchment, for writing and printing. Fine calf-skins, for miniature painting, &c.

181 SPENGLER, H., *Hasli, Canton of Thurgovie*—Manufacturer.

Cow-hide, for sole leather, tanned.

182 THURNEISEN, —, *Bâle*—Manufacturer.

Superfine large eagle paper, for prints and lithography, exhibited for finish and transparency, with thickness.

183 STEINLIN, FELIX, *on the Sihl, City of Zurich*—Manufacturer.

Letter and writing paper, superfine, fine, common, coloured, and with marks.

Common coloured wrapper paper.
Pasteboard, thick and thin, white and coloured.
Silk paper, white and coloured.
Paper for drawing, tracing, lithography, and copper-plate.

Writing books, and music paper.
Printing, packing, and other papers.

[Switzerland possesses about fifty paper and card manufactories, which are distributed through eighteen cantons. Zurich, Neuchâtel, Vaud, and Geneva, manufacture about 30,000 quintals annually. The finer papers are imported from France, Germany, England, and Holland. They export to America and the Zollverein States.

The manufacture of stained paper exists only in three cantons, viz., Zurich, Bâle, and Vand. About 3,000 quintals are annually imported from Germany and France.

Switzerland, in comparison with her population, possesses a great number of printing and bookselling establishments. The towns of Bâle, Zurich, Geneva, Aarau, Schaffhausen, and St. Gall, have been celebrated in the annals of printing, and export a great number of books; unfortunately the French heavy duties limit, in a great measure, this branch of commerce, notwithstanding that Switzerland purchases a considerable number of works imported from France. There are numerous engraving, printing, and lithographic establishments in this country.—D. C.]

184 BONTEMS, CHARLES, *Geneva*.

Box containing dyed black silk for sewing.

185 HUG-ITH, *Schaffhausen*—Importer.

Scarlet cloth, purchased by the exhibitor in Silesia, in its natural colour, and dyed at Schaffhausen.

186 SULZER, GRAF, *Winterthur, Canton of Zurich*.

"Moreas à flammes. Coutnys à flammes satiné."

187 SULZER, HENRY, *Aarof, Canton of Thurgovie*—Manufacturer.

Calicoes of various descriptions, plain and ornamented.

[Switzerland ranks next to England, in comparison with the number of her population, in the production of woven and spun cotton; it is likewise one of the countries that consumes the most. The production has rapidly increased during a period of thirty years, without any protective duties, and notwithstanding the heavy and severe imposts imposed by surrounding neighbours, on the importation of cotton manufactures. This prosperity is due to the abundance of moving power in every part of the country,

the concentration of the population, and her great energy, intelligence, and industrial genius.

Switzerland possesses about 131 looms, which put in motion more than 950,000 spindles; she manufactures all the numbers, up to number 250 (English). The Canton of Zurich is the principal seat of this manufacture. The number of factories here amount to 70, while that of the Canton of Argovie has only 20.

Switzerland is one of the greatest consumers of spun and wove cotton; the annual consumption is reckoned about 3lbs. weight per inhabitant. Mechanical weaving is increasing yearly, principally in the Cantons of Zurich, Berne, Schweitz, Glaris, Bâle, St. Gall, Argovie, and Thurgovie; there are likewise a considerable number of hand-weaving machines. The Canton of Zurich alone reckons more than 20,000 weavers, who annually manufacture more than a million pieces of cotton, of various qualities, at a very low price. There are more than 250 bleaching establishments, the greatest number of which are in the Cantons of Berne, Appenzell, St. Gall, and Argovie. The purity, excellency, and abundance of the water is of great advantage to these establishments, as well as to dyers.—D. C.]

188 BAENZIGER, JOHS, *Thal, near St. Gall*—Manufacturer.

Specimens of needlework, viz.: robe, cape, collars, on muslin and jaconet; caps, on the same; short sleeves.

Embroidery on lace, viz.: scarf; robe; mantle; long and short sleeves; collars; high chemisette; the same with collar; ladies' caps, cuffs, and shawl.

Handkerchief, on French cambric, with lace border.
Tambour needlework, viz.: short sleeves; ladies' cap; collar; habit-shirts, and cape; morning dress on jaconet; robe on muslin.

Plain muslins and plain jaconet.

189 DEPIERRE BROTHERS, *Heiden, Canton of Appenzell, near St. Gall*—Manufacturers.

Specimens of artistic embroidery: a flower basket, needle embroidery, on Mechlin tulle.

Straw bonnet embroidery, made with the needle, on black tulle. The same on white tulle.

Small veils, on white and black tulle.
Cambric handkerchief (*plumbf et points pont d'armes*), satin stitch. The quality of this work is to be estimated by the difficulty of producing the effects of light and shade on Mechlin tulle, and with fine cotton. This article is new, and made by young women who have no knowledge of drawing.

[The manufacture of lace goods is of minor importance in this country. The principal lace factories are those of Neuchâtel, Vaud, Berne, Schwitz, Thurgovie, St. Gall, Appenzell, Aarau, &c. The Canton of Neuchâtel employs more than 3,500 females in hand-embroidery; but this branch of the trade is principally carried on in the eastern parts of Switzerland, where manual labour is extremely cheap.—D. C.]

190 EUGSTER BROTHERS, *Speicher, Canton of Appenzell*—Manufacturers.

Muslin curtain, ground embroidered in crochet. The same with net ground.

Curtains, embroidered, with net application, and with muslin ground, long stitch.

191 EHRENZELLER, FERDINAND, *St. Gall*—Importer.

Sets of six curtains, each set embroidered as follows: tambour on net; longpoint and appliqué on net, and on guipure net; the same on muslin, with net; and appliqué with net. Produced at the Embroideries of Mr. J. Baenziger, at Thal.

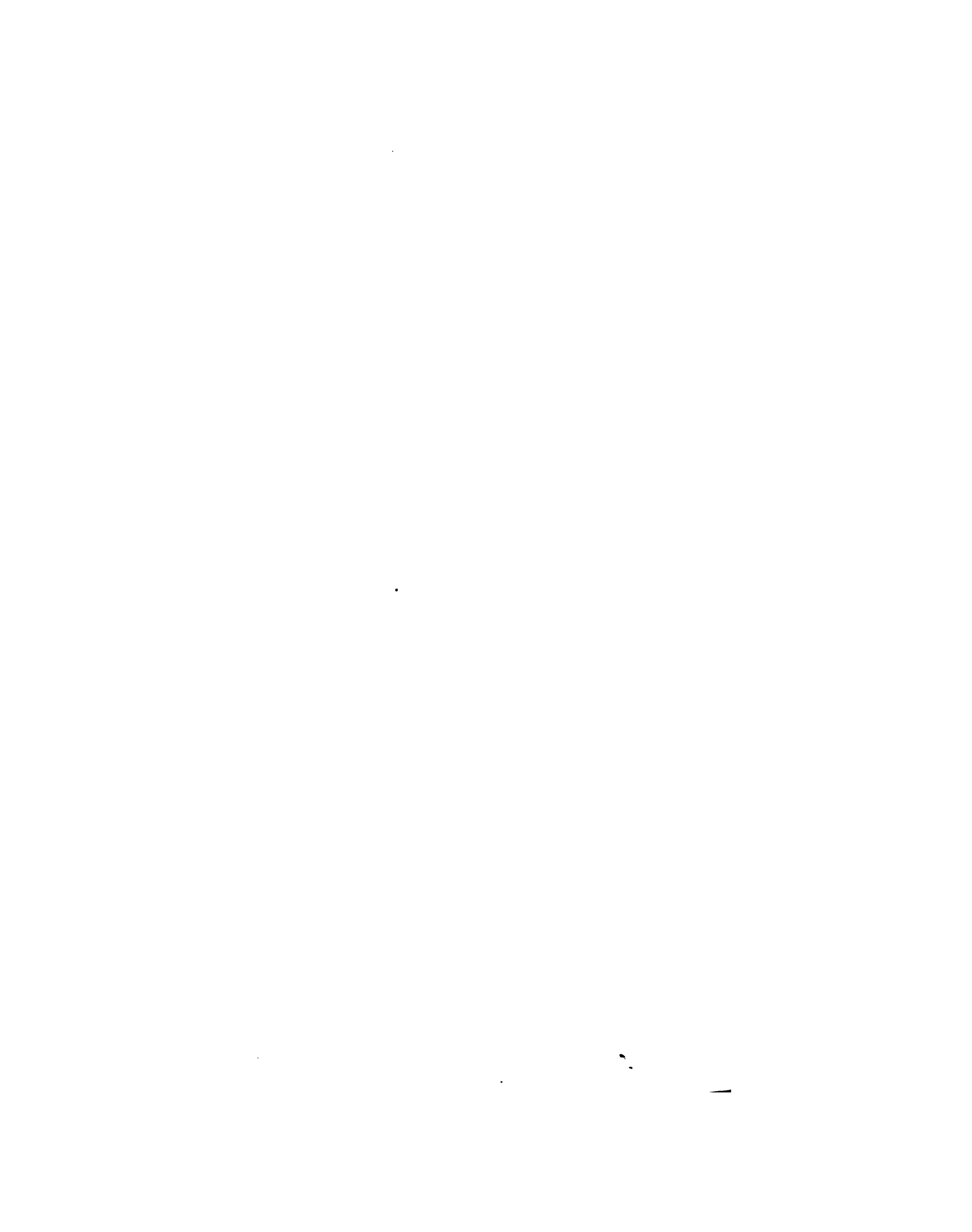
- 192 FISCHE BROTHERS, *Bühler, Canton of Appenzell*—Manufacturers.
Muslin dress, embroidered in colours, and white.
Curtains, of net embroidered, white.
Pair of white net curtains.
- 193 FORSTER, J. D., *Ober-Utzwil, St. Gall*—Manufacturer.
Muslin robes, worked with silk, in columns à jour, &c.; the same, worked with straw.
Gauze, simple; gauze, with corders, and straw work; gauze, worked à jour; jaconet, worked, and in columns.
Gauze shawl, worked with the needle; muslin shawl, with silk; balzarine, in colours.
Shawl, with silk flowers, &c.; shawl, cotton muslin.
- 194 HERMANN, FREDERIC, *Diesenhöfen, Thurgovie*—Manufacturer.
American carpet stuffs; American bed carpet; piece of printed calicoes.
The American bed carpet is exhibited for its size and difficulty of manufacture.
- 195 HOLDEREGGER, CHRISTIAN, *St. Gall, Canton of St. Gall*—Manufacturer.
Curtains, embroidered on muslin and tulle; curtains, embroidered on the same, and application; also, guipure application, and long point.
Ramage tulle application, and long point of laine, coloured; guipure application, embroidered.
- 196 KOELLREUTER, FELIX, *St. Gall*—Manufacturer.
Specimens of cotton embroidery on muslin collar, chemisette, mantille garnie; and ornamented with flowers.
Handkerchief, embroidery on batiste.
- 197 METTLER & SON, *Hemberg, Canton of St. Gall*—Manufacturers.
Ginghams. Jaconets. Toiles du nord. Robes. Muslins. Cravats. Handkerchiefs. Shawls.
- 198 NEF, J. J., *Herisau, Canton of Appenzell*—Manufacturer.
Swiss muslin. Tamboured gauze balzarine; tamboured nainsook. Striped gauze.
Figured muslin (imitation of needlework), exhibited for the fineness of the ground and the figures, which equal needlework.
Figured insertion on bishop-lawn (imitation needlework).
- 199 PAULY, GUSTAVE & AUGUSTE, *Canton St. Gall*—Manufacturers.
Embroidered collar, tamboured; and chemisette.
Pelerine, exhibiting improved tamboured embroidery.
- 200 SCHIESS, EMANUEL, *Herisau, Canton of Appenzell*—Manufacturer.
Veil of cambric needle-work.
- 201 SOHLAEFFER, SCHLATTER, & KURSTEINER, *St. Gall*—Manufacturers.
Lace and muslin curtains, white needlework.
Muslin dress, of coloured needlework and chenille, and two lace veils. Tarlatan.
Muslin from the loom, white jacquard, needlework spots.
Shawls with needle-work and fringes; shawls with lace ground and needlework; shawls ornamented by needlework in wool, cotton, &c.; shawls with muslin Jacquard stripes.
- 202 SCHOCH, SCHIESS, & SON, *Herisau, Canton of Appenzell*—Manufacturers.
Samples of fine embroidery—Handkerchiefs, embroidered on cambric; embroidered handkerchiefs, ornamented with lace and insertions. Collar, embroidered on muslin.
- 203 SUTTER, J. J., *Bühler, Canton of Appenzell*—Manufacturer.
Curtains, muslin and net embroidered.
Ladies' dresses, white embroidery, coloured wool, and silk.
Handkerchiefs, French cambric, embroidered with coloured wool:—portrait of the Queen of England, views, &c., exhibited for difficulty of execution. Handkerchiefs embroidered with human air.
Collar, with embroidery, &c. Pelerine mantelets.
- 204 TANNER, B., *St. Gall*—Manufacturer.
Embroidered muslins (cotton).
- 205 TANNER, JOHN ULBRICK, *Bühler, Canton of Appenzell*—Manufacturer.
Silk pocket-handkerchiefs, embroidered in cotton with portraits, &c.
Curtain, table-cloth, or bed-cover, muslin and silk, embroidered in cotton, representing William Tell and the arms of the twenty-two cantons of Switzerland: specimen of every kind of embroidery.
Transparent silk, representing the female embroiderer while working the preceding, with several landscapes of the country and the dwelling-place of the manufacturer.
Picture of silk, worked in cotton and coloured silk, from nature. Curtain of net, embroidered; muslin curtains, embroidered.
Bed-cover of net muslin, embroidered.
Dress of raw silk, embroidered and coloured in silk, &c.
Dress of muslin, embroidered and coloured in cotton, wool, silk, gold, with feathers and pearls.
Dress of muslin, embroidered with net.
- 206 TANNER & KOLLER, *Herisau, Canton of Appenzell*—Manufacturers.
Embroidered muslin tambour-work, and muslin scarfs, dresses, and shawls, manufactured by Jacques Zeller, at Teufen.
Muslin dresses. Jaconet petticoats.
Shawls, jacquard brocaded on gauze, with fringes; spotted on muslin; manufactured by F. F. Diem, Herisau.
Muslin robes, with gherl flounces, and tucks.
Embroidered muslin robe; the same, with border and flounces.
Embroidered muslin shawl, long-stitch and tambour-work; and handkerchief on French jaconet.
Embroidered muslin curtain, representing all sorts of white and coloured embroidery; subject, "Helvetia," with analogous allegories, and the arms of the twenty-two cantons.
Embroidered muslin robes, long-stitch and tambour-work, with berthe, &c., manufactured by L. Gonzenbach, Högger, St. Gall.
White spotted muslins (*petits pois*), bouquets, rames, &c.
- 207 WALDBURGER & LANGENEGGER, *Bühler, Canton of Appenzell*—Manufacturers.
Embroidered robes of clear silk, and of clear gauze-silk. Perfectly specimens of the manufacture of Switzerland; the silk is obtained in the country of St. Gall and Appenzell: the weaving has been executed by John Waldburger, in Bühler, and the embroidery by Mrs. E. Langenegger, at Gais.
- 208 STAEHEL-WILD, C., *St. Gall*—Manufacturer.
Table-cloth, or bed-cover, superfine embroidery.
Another, the same design, in fine long-stitch; the price of this last is only the fifth of the first.
Curtains, muslin, white embroidered.
Handkerchief, French cambric, &c.
Net-white embroidery. Muslin. Collar of cambric; and on muslin, fine embroidery.
Insertions on muslin. Gentlemen's
on French cambric. All der
Schatter, at St. Gall.

- 209 ZUPPINGER, THEODOR, *Maennedorf, Canton of Zurich*—Inventor.
Carpet of new velvet, woven.
- 210 BALLY & Co., *Schoenenwerd, Canton of Soleure*—Manufacturers.
Braces, elastic and non-elastic, cotton, and half silk.
- 211 DIETIKER, J., *Berne*—Manufacturer.
Japanned leather boots, the legs of red morocco.
- 212 FREY, T. F. & T., *Aarau, Canton of Argovie*—Manufacturers.
Common cotton and elastic braces; middling and fine braces; half silk and half cotton elastic braces and garters. Half silk and half cotton fancy elastic braces. Elastic cotton belts.
- 213 ISLER & OTTO, *Wildegg, Canton of Argovie*—Manufacturers.
Laces, a new use of straw-haulms as raw material; peculiar in combination of colour and pattern; for ladies' bonnets and pasteboard work. Trimming, exhibited for novelty of design, material, and workmanship.
- 214 LECOULTRE BROTHERS, *Brassus, Vaud*.
Razors, à sonnettes. Razors with two, with four, and with six blades.
- 215 LECOULTRE, JAMES, *Sentier, Canton of Vaud*.
Razor, with six spare blades, with back and a case. Razors, with six, four, and two blades, without backs. Razors, with single blades.
- 216 GRAESER & SCHWEIZER, *Rheinau, Canton of Zurich*—Manufacturers.
Metallic cloth, employed in paper manufactures. Iron wire flower-pot, for ornamental use.
- 217 SCHEITLIN, HENRY & DAVID, *Canton of St. Gall*—Manufacturers.
Buttons for coats. Buttons for ladies. Umbrella, curtain, and boddice rings.
- 218 SCHOPFER, SAMUEL, *Gessmay, Canton of Berne*—Founder.
Cow bells.
[The principal care of the Swiss husbandman is his herd of cows, which are of a peculiar and excellent breed, and supply a large daily proportion of milk, yielding a quantity of cheese. These cows, pasturing among the mountains, are supplied with bells, for their more ready discovery. Large quantities of cheese are exported to England and other countries. It has been calculated that there are 800,000 cattle in Switzerland.—R. E.]
- 219 DUTEETRE, AUGUSTUS, *Geneva*.
Gold pocket-book. Gold cigar-case, with enamel and painting, and a watch attached.
Gold money-case, with enamel and a watch.
Gold ring, and bracelet with jewels and watch.
Gold walking-stick head, with mechanism.
- 220 GOLAY, LERESCHE, *Geneva*.
Gold souvenir, with a small watch, under an enamelled painting—subject, "The wilful little boy." On the other side is a landscape, representing a lake of the high Alps, from the original of Calame, with place for a portrait or hair.
- 221 FRIES, HENRY, *Canton of Zurich*—Designer and Manufacturer.
Embossed drinking-cup.
This cup, the design of which represents Alpine pursuits, is represented in the annexed cut.



Fries' Embossed Drinking Cup.

- 222 MASSY, JOHN FRANCIS, *Sentier, Canton of Vaud*.
Sundry imitative gems of various kinds.
- 223 VERET, JAMES, *Nyon, Canton of Vaud*.
Crystal of quartz in its natural state.
Topaz, produced from quartz by a peculiar process.
Topaz, obtained by the same process, set in a breast-pin, on gold-leaf.
[Quartz crystals are not unfrequently made the means of imitating certain gems, by partially colouring or tinting them with various metallic oxides; but the usual mode of manufacturing imitative precious stones of all kinds is by means of a kind of glass, called technically "paste," and composed of pounded rock crystal, melted with alkaline salts, and coloured with metallic oxides.—D. T. A.]
- 224 FLUEKK, JOHN, *Brienz, Canton of Berne*—Manufacturer.
Table of maple-wood.





43.

LADY'S WRITING TABLE. M. L. WETBY.

- 225 MEYSTRE, EDWARD, *Lausanne*.
Two turned cups and a turned watch-stand, made of maple-wood, without assistance, by a pupil of the Asylum for the Blind at Lausanne.
- 226 VOGEL, ANTOINE, *Thoune, Canton of Berne*—Manufacturer.
Round table, made of twenty-eight different kinds of wood, inlaid with 38,000 pieces, arranged in eight different ways.
- 227 ABT BROTHERS, *Buensen*, BRUGGESSER & Co., DUBLER & SONS, GRISSMANN & Co., ISLER, J., jun.; ISLER, J., & Co.; ISLER, J., & SON; MEYER BROTHERS; WOHLER & Co., *Wohlen, Canton of Argovie*—Manufacturers.
Twisted straw. Cordonnet. Plaits. Porsades. Willow (chip). Willow plaits (chip). Horsehair plaits. Figured coronet. Torsave plaits. Manilla plaits. Plaited laces (trimmings). Bonnets Coffs (trimmings), large and small. Feathers for bonnets. Trimmings. Flowers. Tissus (only patterns). Bonnets, three parts. Bags. Cigar boxes. Bell ring. Shippers. Sportsman's pouch. Carpet.
[The straw trade occupies about 40,000 persons: a portion work at the factories, but the greater number at home. The straw is of home production, embroidered, and mixed with silk, thread, horse-hair, &c. The more important factories of this material are in the Cantons of Argovie, Thurgovie, Appenzell, and St. Gall. The Canton of Fribourg is more especially confined to the manufacture of straw hats and bonnets. They export to almost every country, and the articles of this manufacture are highly appreciated for their beauty and low price.—D. C.]
- 228 CLARAZ, AMBROISE, *Fribourg*—Manufacturer.
Specimens of flowers, plumes, and wreathes, made of straw, for trimming bonnets. Fashionable and fancy straw bonnets. Plaits, and a variety of fancy articles of straw for bonnets and trimmings.
- 229 FAESSLER, JOHN A., *Appenzell*—Manufacturer.
Milk tubs in miniature, of the fittest form for carrying milk.
- 230 HARTMANN, LOUIS, & Co., *Fribourg*—Manufacturers.
Stalks of wheat grown in the canton of Fribourg, prepared for straw plaiting. Split straw for plaiting. Pieces of plaiting with seven ends, single; with fifteen ends, single; and with fourteen ends, double: prepared by the plaiting women. Piece of fancy plaiting, coloured, thirty ends, double and prepared for sewing. Ladies' bonnets, common and fancy plaiting.
- 231 HURTER & BUHOLZER, *Lucerne*—Manufacturers.
Horse-hair (double and single) tress.
- 232 LENDENMANN, J. CONRAD, *Grub, Canton of Appenzell*—Manufacturer.
Printers' rollers, made of "Swiss imitation caoutchouc," a composition, invented by the exhibitor; it is elastic, tough, soluble in water, and soft, and capable of adaptation to different temperatures. In cylindrical forms it is used in printing for applying the ink. The rollers marked A are suited to moist offices; B, to places of moderate temperature; C, to dry air. For a considerable time the composition is softer than is necessary for immediate use. The axis is of iron, to prevent curving.
- 233 PIERCE, LOUISA, *Geneva*.
Caoutchouc knit-stocking for invalids.
- 234 SULZBERGER & AKERMANN, *Meisterschwanden, Canton of Argovie*—Manufacturers.
Horse-hair and silk lace. Lace made of Ostindian hemp, horse-hair and silk. Horse-hair and straw blonde lace. Straw and silk lace. Straw, Ostindian hemp, and silk lace. Specimen of cabas, cigar-cases, tassels, and sundry straw ornaments. Coloured tresses of Ostindian hemp and silk. Straw rope, coarse and fine. Twist straw. Tresses of Indian hemp and silk. Bleached straw produced by a new bleaching process; bleached wood. Horse-hair tress, double. Tresses of straw and horse-hair. Tress of Indian hemp and silk; and of straw and silk. Straw and wood.
- 235 BAATARD, JOHN ANDREW, *Lausanne*.
Plated work-box, with mahogany wood and steps.
- 236 BAUTTE, T. F., *Geneva*—Manufacturer.
Presse-papier, in gold-enamelled rococo style; the base ornamented with painted views, representing three Swiss scenes and one of Naples; groups of flowers, painted in enamel upon gold, with a mechanical singing bird.
- 237 WETTLI, MICHEL L., *Berne*—Manufacturer.
Lady's mechanical escrutoire, of white wood, constructed in such a manner as to enable the person to write either in a sitting or standing posture. It comprises seventeen drawers, all of which are locked with the same key. The lower part, used for writing in a sitting posture, is provided with a peculiar kind of mechanism, so that by pulling the drawer the upper part of it disappears to make room for the operation. This escrutoire is represented in the Plate 43. Carved work, representing the rustic economy and Alpine life of the inhabitants of Switzerland.
- 238 FLUEKE, ELIZABETH, *Brienz, Canton of Berne*—Manufacturer.
Lady's work-basket, carved in maple-wood.
- 239 BAUMANN, ANDRE, *Brienz, Canton of Berne*—Carver.
Four-cornered box, in white wood; the carving on the cover, which is made out of a single piece of wood, represents the Alpine rose. A box made of yew-tree wood, of an oblong form; the carving on the cover is an imitation of the garden rose and a garland of flowers. Small four-cornered box, made of yew-tree wood, inlaid with white wood, with similar ornaments.
- 240 CHENEVARD, LEWIS, *Geneva*.
Enamelled map of the islands of Great Britain: illustrating an application of enamelled painting to the improvements of maps.
- 241 HESS, LEONARD, *Au Jeu de l'Arc, Geneva*—Painter.
Enamels. Crawfish-monger. Portrait, after Netscher. Young Beggar, after Murillo. The Card-player, after Julius David. Jane of Arragon, after Raphael. The Bride of Lammermoor, after Tony Johannot. Fancy head. The Guardian Angel, after Decaisne. Portrait, after Voys. Venus and Cupid, after Titian.
[The colours used for enamel painting have all a metallic base; the reds being made from the oxide of gold, greens from copper, yellows from lead, blues from cobalt, &c.—J. H.]

242 KERRLI BROTHERS, *Schwendi, near Meyringen, Canton of Berne.*

Box-wood salad spoon and fork; the same, with the words "La Suisse." Ruler. Drinking-cup for children.

Nut-crackers, ornamented with vine-leaves, roses, a dragon, and a crocodile. Folder, handle of chamois-horns, &c.

Knitting-needle case. Match-box. Pin-case. Boat-hooks, &c.

Painted plate, sculptured by Daniel Wægelin, in Thoune.

243 KESSLER, NICOLAS, *Fribourg*—Designer and Carver.

Statue representing Father Girard (Franciscan friar); designed by the artist, and carved in chestnut-wood.

244 KLARER, JOSEPHUS ANTON, *Appenzell, Canton of Appenzell.*

Ornament, or jewel-case, of nut-tree wood. The cover represents three figures, in the costume of the canton of Appenzell, and the arms of the twenty-two cantons of Switzerland. The four sides of the case represent—The Grütli Oath, a group of seven figures, including William Tell and his son; Tell's shot (five figures); the debates of the federal authorities concerning the money-bill, and various other representations of Swiss characters and events.

245 LOMBARD, ALEXANDER CHARLES, *Geneva*—Inventor and Producer.

Five enamels:—Miniature pocket-compass, with face painted in enamel; on the cover is an enamel portrait of Admiral Nelson.

Mourning dial, with a small carved second-hand in the black part, bearing various inscriptions.

Turkish calendar-dial, divided into five parts—a large dial-compass (*tom d'heures*); monthly calendar; annual calendar; a small second hand, with the names of numbers in Turkish type.

Chinese dial, with its dial-compass representing twenty-four hours, divided into eight quarters, each hour having 120 minutes.

Romish dial, with a perpetual yearly calendar.

[Many eminent artists, sculptors, and engravers, reside in the principal towns of Switzerland, where they find considerable occupation. A great number of designers are employed by the cotton manufacturers; and in the Cantons of Geneva and Neuchâtel are numerous workshops for the engraving of boxes, watch-cases, and jewellery. Numerous enamel-painters find employment in Geneva, chiefly in the watch-case and jewellery department. The Society of Arts founded in this town public schools for architectural and ornamental drawing, engraving, modelling, &c. Medals of a large size are struck at Geneva.—D. C.]

246 HALLMEYER-APPENZELLER, ANETTE, *St. Gall*—Manufacturer.

Chimney-screen, with landscape: a view of Meyringen, in the Oberland of Berne. The composition is a combination of the plastic art with that of the maker of artificial flowers. The glacier in the back-ground has been painted in oil, to give effect to the picture.

247 MEZENER, JOHN, *Jaun, near Meyringen, Canton of Berne.*

Group of ten chamois and huntsman, on a hill.

248 MICHEL, GASPARD, *Brienz, Canton of Berne*—Carver.

Peasant's farm-house in the Bernese Oberland, with its dependencies. By removing the roof, the interior, even to the cellar, is exposed to view, with the furniture, &c.

249 DUFAUX, ORGELET, *Geneva.*

Full-length portrait of Her Majesty Queen Victoria; painted in enamel, from the engraving by Cousins, after the original by Chalon. Painted with new colours, made in Geneva, by Mr. Louis Dufaux, sen.

250 SCHILD, J., *Brienz, Canton of Berne*—Carver.

Carved table. Bernese peasant's habitation.

251 SCHLÆCK, Madame, *Geneva.*

Paintings on alabaster, whitened and hardened for brooches and other articles of jewellery; covers of chests, boxes, and paper weights.

252 SCHOELL, CHARLES A., *St. Gall*—Modeller.

Relievo of the mountains of Appenzell, size of 36 square feet. The artist has been commissioned by the government of St. Gall to make a model in relief of the canton according to the trigonometrical survey. The model includes a surface of about 130 square miles on the scale of $\frac{1}{2000}$, and represents Mount Saentis with its dependencies, with the minute details accurately represented. In the execution of this work, the artist made use of apparatus of his own invention, including the plastic substance of the relief, which is very durable and light. The colour of the relief is an imitation of the ruddy glow of evening.

[The mountains of the Alps are peculiarly adapted to give effect to relief maps and models, and have often been the subject of ingenuity like that shown by the above exhibitor. Such models well illustrate certain points in physical geography, and are therefore valuable for educational purposes. We owe to M. Bauerkeller the production of relievo plans, at prices calculated to bring them into general use.—D. T. A.]

253 SPALINGER, JOHN, *Schaffhausen.*

Album, with several woodcuts, executed by the exhibitor. The drawings were executed by several Swiss artists.

254 STOETZNER, CHR. F., & Co., *Schaffhausen*—Producers.

Galvano-typic plates. Ticket for recommendation to the Galvanic Institution; representation of two figures; title sheet to Swiss songs, composed and drawn by M. Bendel, Munich; portrait of General Maillardoz; and ticket, representing the four seasons.

The object of the galvano-typic plates is, to supply the place of woodcuts at a cheaper rate. The artist can draw his composition upon a plate prepared for the purpose, which, by means of a chemical process, can be filled in for printing, without the least alteration. The nature of this process has not yet been made public.

[We may fairly infer, that this process of galvanotype is of an analogous character to the glyphograph, and similar methods of electro-chemical deposit.—R. H.]

255 JAUN, T., *Meyringen, Canton of Berne*—Carver.

A group of nine chamois and huntsman, carved in maple wood.

256 UELTSCHI, JOHN, *Oberwyl, Canton of Berne*—Manufacturer.

Brooches, watch keys, shirt buttons, and rings, made of chamois horns.

257 WYTENBACH, CHARLES, *Berne*—Proprietor.

A relievo of the cathedral of Strasburg, executed in card-paper, by Julius Leemann, bookbinder and sculptor in Berne. Exhibited for ingenuity in the carving of the galleries and the ogives, as well as in the principal ornaments.

The whole of this imitation of the master-piece of Erwin de Steinbach, was executed with a penknife by the artist, a working bookbinder, who was employed on it incessantly for three years.

258 LEMANN, JULES, *Berne*—Carver.

A model, representing the fountain erected on the market place at Nuremberg, in Bavaria (scale 1 foot to 30 feet). This monument, which is remarkable for the simplicity and beauty of its composition, and for the style and finish of the work, was begun in the year 1355, and completed in 1361, by the celebrated masons George and Frederic Rupruht (brothers); the figures were executed by Sebald Schonhofes, a celebrated statuary. The figures surrounding the pyramid represent eight prophets of the Old Testament. The sixteen figures placed lower are those of heroes of different times and religions, and the seven elector-princes. The other eight figures, in a sitting posture around the basin are those of some celebrated ecclesiastical dignitaries.

259 WIRTZ, JOHN, *Berne*—Painter.

A table in white wood, representing a view of the chapel of William Tell, and the different costumes of the twenty-two cantons.

A table in dark wood, with a view of the Handekfall.

A desk in white wood, with a view of the Siessbach.

Letter-bag, with view of the Wengeralp.

Salad spoons and forks, with views and costumes.

Scissors, folders, pocket-books, card-cases, needle-cases, &c.

Painted eggs in wood; egg cups. Tassels for books. Sweatmeat boxes. Porte-monnaie cases for pens, cigars, fans, &c.

260 ZIEGLER-PELLIS, JAMES, *Winterthur*, *Canton of Zurich*—Manufacturer.

Divers articles of pottery ware, raw and glazed. The large pieces are exhibited for fineness and exactness in the expression of the medallions, the strength and density of the pipes, the excellence of the glaze, which is without cracks or flaws, and the difficulty of execution in soft clay.

261 GEILINGER BROTHERS, *Winterthur*, *Canton of Zurich*.

Yasmas, dyed and printed.

262 LECOULTRE, GUSTAVE, *Brassus*, *Canton of Vaud*—Manufacturer.

Razor with seven plates, ivory handle, case, and screw-driver.

Razor with three plates, and buffalo handle; of the same description: another with two plates, and another with one plate.

263 LECOULTRE & GOLAY, *Brassus*, *Canton of Vaud*—Watchmaker.

Large movement with twenty teeth; another with sixteen teeth: one with twelve, four with eight, two with seven, and two with six teeth, fixed on a wheel.

264 SCHUCHMANN, W., *Locle*, *Canton of Neuchâtel*—Engraver.

Two coins, engraved in steel; the one representing a group of two persons, the other the head of a warrior.

265 FISCHER, EDWARD, *Chur*, *Canton of Gräubünden*—Manufacturer.

A double American rifle with two barrels and only one trigger; the right barrel straight, the left with a half winding.

266 FIGUET BROTHERS, *Sentier*, *Canton of Vaud*—Manufacturers.

A gold watch, enamel dial, duplex escapement, five rubies, maroquin case.

267 PAILLARD BROTHERS, E. A., *St. Croix*, *Canton of Vaud*—Manufacturers.

A gold watch, five rubies, portrait of the Queen of Holland, with diamonds.

A gold watch, five rubies, to wind up by the pendant.

268 KRAMER, AUGUST, *Locle*, *Canton of Neuchâtel*—Manufacturer.

A gold watch, enamel dial, independent seconds, and metal thermometer; twenty holes in rubies, compensation balance.

269 SCHMID BROTHERS, *Thalweil*, *Canton of Zurich*—Manufacturers.

Silk handkerchiefs; the weaving, printing, finishing, and entire manufacture by the exhibitors: warp silk, woof samples of spun silk, called shappe sublime.

270 BURKHARDT, JAMES, *Zurzach*, *Canton of Argovie*—Manufacturer.

An assortment of improved razors and razor-straps.

271 PERRET, C., *Chaux-de-fonds*, *Canton of Neuchâtel*.

Thread lace.

272 GIMPER, G., *Canton of Zurich*.

Tooth-powder, soap, &c.

273 FIGUET BROTHERS, *Sentiers*, *Canton de Vaud*.

Gold watches.

274 PATEK, PHILIPPE & Co. (late Patek & Co.), *Geneva*—Manufacturers and Inventors.

Assortment of watches, highly finished, forming a complete collection, with all the modern improvements, and various species of ornaments, including plain watches, repeaters, self-acting clock-work watches, tac' watches, intended for the blind; watches provided with independent seconds hands and date hands; also with insulated sea-compasses, spy-glasses, secret compartments, and extra plates; likewise watches called "à triple effet," capable of being transformed into three different shapes. The smallest watch ever constructed, the diameter of its works being no more than $3\frac{1}{2}$ lines, about $\frac{3}{10}$ ths of an English inch, &c. This watch is represented of its real size on the next page.

This collection contains common and repeating chronometers, tested and provided with official certificates from astronomical observatories.

Most of these watches are wound up and set without a key by means of a mechanism invented by the exhibitors, so simple and solid as to be applicable to any watch, even to those which have two main springs independent of one another. The same for exportation in the self-acting clock-work watches, and those provided with independent seconds hands. This invention, besides its great convenience, prevents the necessity of opening the watch, and excludes the dust or damp from the interior, where the oil, being less exposed to the action of the air, is much longer preserved.

Specimens of works not yet gilt, in order to exhibit the novelty of the manufacture and the products of the machinery and tools invented by the exhibitors.

The calibre of these watches is also devised and manufactured by the exhibitors, and every article is manufactured on the premises of the exhibitors relating to watches and chronometers, from the simplest to the most complicated, including engine-turning, engraving, chasing in relief, jewellery, and enamel painting in flowers, landscapes, portraits, and historical subjects.

Several of these watches, including tac', compass, and other watches, are represented in the cuts on the next page.

275 STÉCHE & BONNET, *Geneva*.

A silver cup, with a trophy of arms.

276 BOUY BROTHERS, *Geneva*.

Fifteen medals in bronze, of which two are 4 inches in diameter.

277 LACHENAL, *Geneva*.

Model of a new system, invented by Professor Colladon, of diminishing the friction in the single pin escapement.

278 BROUILLET, —, *Lausanne*—Manufacturer.

Gloves, of different sizes.



Messrs. Patek and Co.'s Watches.



NORTH AREAS, G. H. 47.

Commissioner for the Roman Government, Signor CARLO TREBBI. Agents, J. and R. M'CRACKEN, 7 Old Jewry.

It is deserving of notice, that in the Roman collection the first and last sections of the Exhibition are principally though not exclusively represented—the raw materials and sculptures, &c. Among the former are specimens of siliceous quartz, used for glassmaking; samples of asphalt, alum, &c. Some textile materials are also shown, such as hemp, silk, with samples of their manufacture; there is also a collection of papers made from flax and hemp. Specimens of bricks and tiles, in imitation of mosaic marble, are likewise exhibited. Among the fine arts, the sculptures, cameos in onyx and shell, and the beautiful mosaic-work, will receive much attention. The vases, candelabra, &c., form also attractive objects.—R. E.

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| <p>1 BIANCOUCINI, Count BIAGIO.
Sample of siliceous rock used in the manufacture of bottles.</p> <p>2 PASQUALI, DOMENICO RINALDI.
Samples of asphalt, natural and manufactured.</p> <p>3 SNEIDER, PELLEGRINI.
Four blocks of natural alum.
[Alum is found native at Tolfa, near Rome, in the form of a crystallized mineral, often of considerable hardness, of compact or earthy fracture, and occasionally in crystals of some magnitude. The alum of commerce is obtained by roasting this mineral and afterwards exposing it to efflorescence; it is then reduced to a paste, and afterwards dissolved and crystallized. The alum thus obtained is of the finest kind, the superiority over common kinds being said to be due to an excess of alumina, but it is probable that the temperature at which the evaporation is performed is of more importance than the raw material.—D. T. A.]</p> <p>4 BIANCOUCINI, Count.
Sample of the product of tow of the Bolognese hemp. Samples of several woods.</p> <p>5 MORTI, Signor.
Sample of silk.
Pine-cones.</p> <p>6 BERRETTA, DANIELE—Manufacturer.
Samples of various silks manufactured by the exhibitor.</p> <p>7 THE FILANDA-BRACCI AL FANO.
Samples of silk.</p> | <p>8 RANUZZI, Count ANGELO.
Veils manufactured, partly in crape, and partly in stripes of various colours.</p> <p>9 THE CHAMBER OF COMMERCE OF THE CITY OF CENTO.
Sample of Centese hemp, from the province of Ferrara, made into sail-cloth, and cords of various sizes.</p> <p>10 MINGHETTI, MARCO.
Samples of hemp, and of articles manufactured from it.</p> <p>11 BIANCHINI, LUIGI.—Inventor.
A new spring bit.</p> <p>12 MILLANI, PIETRO.
Samples of paper made of flax and hemp.</p> <p>13 MARCHESI, ALESSANDRO & GIUSEPPE OSSOLI.
Samples of bricks and tiles, in imitation of mosaic marble, manufactured of argillaceous earth from the vicinity of Rome.
[The material of which these bricks and tiles is made is of unusually fine and even texture, and of great purity. The earth appears to be a kind of pozzuolana, and is of volcanic origin. The mosaic work is not much inferior to that adopted for more valuable material.—D. T. A.]</p> <p>14 LIVIZZANA, AVO ERCOLE.
A sample of a work in paper, cut by the exhibitor with scissors only.</p> |
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15 BARBERI, THE CAVALIERE—Artist.

A mosaic table, invented and executed by the exhibitor representing celebrated views in Italy.

[The exquisite perfection to which the art of Roman mosaic has reached is well exemplified in this fine specimen in which many of the cities of Italy are represented with a taste and elegance rarely equalled in similar works.

Roman mosaic is a combination of small oblong pieces of marble, glass, or other substance, of different colours, and cemented together into a compact mass, which is in fact a solid picture. The surface of such a picture can be ground down without injury, and is therefore much more durable than any ordinary picture. The art of mosaic is itself very ancient, but pictures have only been prepared since the commencement of the 17th century. In order to produce such works of imitative art, it is said that upwards of 50,000 different tints of glass are provided and kept in readiness.—D. T. A.]

16 LEYLAND, Captain THOMAS, 7 Old Jewry—Proprietor.

Three groups in marble, executed by John Benzoni, an Italian sculptor, 73 Via del Borghetto, near the Piazza del Popolo, Rome.

1. Cupid and Psyche. The god is on the point of flying to heaven to carry to Venus, his mother, the "Box of Beauty," destined to calm her anger against Psyche. At his feet lies the arrow, the sharp point of which had recalled Psyche to life from the swoon she fell into, when she opened the vase given to her by Proserpine.

Four bassi-relievi, relating to the life of Psyche, are to adorn the sides of its base. They are now in progress of execution. The subjects are as follows:—Psyche on the point of killing Cupid, supposing him to be a monster. Psyche receiving the "Box of Beauty" from Proserpine in the infernal regions. Mercury transporting Psyche to Olympus. The marriage of Cupid and Psyche in the presence of all the gods.

2. "Gratitude," represented by the naked figure of a very young girl seated on a stone and extracting a thorn from the paw of a little dog.

3. "Innocence defended by fidelity." This is a pendant to and a continuation of the preceding subject.

Rinaldo e Armida. A group in marble, executed by Sig. Rinaldo Rinaldi, 27 Via delle Colonnate, Rome. The subject is from the two following stanzas of Tasso's "Gerusalemme Liberata."

Quì tacque: e, stabilito il suo pensiero,
Strale sceglieva il pul pungente e forte;
Quando giunse e mirolla il cavaliere
Tanto vicina alla sua estrema sorte,
Già compostasi in atto atroce e fero,
Già tinta in viso di pallor di morte.
Da tergo le si avventa, e l' braccio prende,
Che già la fera punta al petto stende.

Si volse Armida, e l' rimirò improvviso;
Chè nol sentì quando da prima ei venne.
Alzò le strida; e dall' amato viso,
Torse le luci disdegnosa, e svenne.
Ella cadea, quasi fior mezzo inciso,
Piegando il lento collo; ei la sostenne.
Le fe' d'un braccio al bel fianco colonna;
E tanto al sen le rallentò la gonna.

Tasso, *Gerus. Liber.*, c. xx, st. 127, 128.

Marble figures: the nymph Glycera, and a nymph, both by the late R. J. Wyatt, of Rome.

"Pausias, the celebrated painter of Sicily, in his youth became enamoured of a beautiful female of the name of Glycera, who had a singularly elegant taste in the arrangement of flowers for chaplets. Pausias, painting after nature and his mistress, became highly distinguished for his skill as a painter of flowers. The last effort of his pencil was a picture of Glycera herself seated, and in the act of arranging a chaplet. A production, in the creation of which, love, genius, and gratitude equally assisted,

necessarily became a masterpiece; it was called the 'Garland twiner,' a copy of it sold for no less a sum than two talents."

This statue is represented in the accompanying Plate.

17 BOSCHETTI, BENEDETTO—Artist.

Two mosaic tables, of 3 feet diameter each, in Byzantine style, representing the Triumph of Love and the Blessed Soul.

18 MACDONALD, LAWRENCE—Sculptor.

An Ionic statue in marble, 6 feet high, and 3 feet in diameter.

19 MODA, TOMMASO DELLA—Sculptor.

A large tazza of Oriental alabaster, worked by the exhibitor. This tazza, which is ornamented with two handles, is of the diameter of 3½ English feet; and from one handle to the other more than 4 feet.

[The unusual beauty of the material obtained by the artist for this work is at least as striking as the general aspect of the tazza itself, although this is as perfect as anything of the kind that is to be seen in the Exhibition. The material is a peculiar kind of limestone, and is by no means an alabaster, having received the latter name entirely from its softness and tone of colour, and the transparency of the stone. There would appear to be some difficulty in the details of working, owing to want of toughness in the material, but these have been perfectly overcome.—D. T. A.]

20 MOGLIA, CAVALIERE LUIGI.

Mosaics:—

1 Temples of Pæstum.

2 A circular table. This table is represented in the accompanying Plate.

3 A quadra, representing St. George.

21 MOGLIA, DOMENICO.

Mosaics:—

1 The Roman Forum.

2 The Colosseum.

3 Temples of Pæstum.

22 ROCCHIGIANI, ANTONIO—Artist.

A mosaic, representing the Temples of Pæstum, at sunset.

23 THE ROYAL MANUFACTORY AT ST. PETER'S.

Mosaics, representing—

1 A square, copied from the celebrated "S. Giovanni Battista," by "Guercino;" 4 feet high by 3 feet wide; by Raffaele Castellini.

2 A medallion, the portrait of Pope Bonifacio II., copied from the picture by Sig. Roberto Bompiani. These are intended to be placed in the New Basilica, St. Paul's. By Raffaele Castellini.

24 SAVALINI, THOMAS.

Cameos in pietra dura (*Onyx*):—

1 Jupiter Fulminator, or Ceraunius, original by Thomas Saulini.

2 Portrait of the Rev. Dr. Townsend.

Cameos executed in shell:—

1 The birth of Venus; from a basso-relievo, by John Gibson.

2 The Hours bringing the horses to the chariot of the Sun; from the basso-relievo executed in marble for Earl Fitzwilliam, by John Gibson, R.A.

3 Mount Roveito; from the fresco of Raphael in the Vatican.

4 Spring; from a basso-relievo by Thorwaldsen.

5 Summer; from the same.

6 The marriage of Cupid and Psyche; from a basso-



181.

A TABLE TOP, IN MOSAIC. ROME.





259.

STATUE OF GLYCERA. BY THE LATE R. J. WYATT. ROME



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relievo executed in marble for Her Majesty the Queen, by John Gibson, R.A.

7 Autumn; from a basso-relievo by Thorwaldsen.

8 Winter; from the same.

9 Bellerophon receiving Pegasus from Minerva; from a basso-relievo in marble, executed for C. S. Dickins, Esq., Costhurst, near Horsham, Sussex, by John Gibson, R.A.

10 Celestial and terrestrial love contending for the soul; from a basso-relievo executed for Lady Jane Davy, by John Gibson, R.A.

11 Young Bacchus, attended by Fauns; from an antique terra-cotta, in the Museo Campana, Rome.

12 Cupid and Hymen; from a basso-relievo by Thorwaldsen.

25 Small subjects in mosaic.

26 RAINERI, BISCLA, Count. (Agents, Fordati & Coxhead, 13 Old Jewry Chambers.)
Specimens of rough and refined sulphur.

27 PELLEGRINI, SNEIDER, Rome.

Two pieces of natural alum from the mountains of Civita Vecchia.

One sample of Pozzolana, or Roman cement, from the mine of San Paul, of Rome.

28 GOTT, M.

"Ceres," a statue.

29 RINALDI, R.

Round top of a table, mosaic work in hard pebbles.

31 TRENTANOVE, A.

A dove and a candelabrum, in plaster.

32A MANLEY, GENERAL, Proprietor.

The celebrated cameo of Jupiter overcoming the Titans, engraved on pietra dura (a fine onyx), and considered to be the chef-d'œuvre of the artist. By Salvator Passamonti, Rome. (Pupil of Canova, and first engraver to the Roman Mint.)

This cameo is represented in the annexed cut.



Passamonti's Cameo of Jupiter overcoming the Titans.

32B CASSIN, H.

Group of the Laocoon, executed at Rome. The story of Laocoon is told by Virgil; the horrible fate of this unfortunate man and his children was brought upon them by the father's disobedience to the will of Minerva.

32c View in mosaic of the cascade of Tivoli.

33 View in mosaic of the Pantheon, by Cavaliere Luigi Moglia.

34, 35 Two scroll tables, in mosaic.

36 Several small subjects, in mosaic.

37 Three portions of the Roman Forum, executed in yellow marble, representing the Temple of Jupiter Stator, the Column Foca, the Temple of Jupiter the Thunderer, and various other specimens.

38 A table of about two feet and a half diameter, representing St. Peter's in the centre, the campanile, &c.

39 A mosaic, with two pigeons and flowers.

The above 34 to 39 inclusive are by E. Dies, of Rome.

40 Frame, representing two figures, after Carlo Dolci (mosaic).

41 Frame: subject, a Wild Boar Hunt.

42 Frame: view of the Great Piazza of St. Peter's, at Rome.

43 Frame: view of the Colosseum.

44 Frame: view of the Pantheon.

45 Frame: view of the Temple of the Sybil.

The above 40—45 inclusive by the Cavaliere Luigi Moja.

46 A vase and patera in silver, by Benvenuto Cellini, the property of Capt. Leyland. Very richly chased. The subjects of the vase appear to be partly of historical and partly of an allegorical character. The patera exhibits various scenes of pastoral occupation, boar hunting, &c.

47 Frame: the B

48 JONE

A Bagnarola, nificent block, Rome.

[Lapis-lazuli is found in veins, with various other minerals, in the mountains of the Apennines, near the city of Rome.]

Lapis-lazuli is a sulphur-silicate of alumina, and lime or soda. It is hard, crystalline but rarely in crystals, and it is extremely rare that a specimen is found of anything like the dimensions of the specimen before us.—D. T. A.]

49 Various shell cameos, carved by Guiseppe Deas, of Rome.

50 DIES, E.

Four large volumes, in white vellum:—Canina's Roman Edifices (*Edifizi di Roma*), 2 vols.; Canina's Christian Epochs (*Tempi Cristiani*); Maritime Antiquities of Etruria (*Antichità d'Etruria Marittime*).

51 NORCHI, E., 13 King William Street, Strand.

English vase, copied from the antique, in green Prato marble, triangular stand, and solid lions' heads.

52 TRENTA NOVE.

Vase of white marble, in form of an Etruscan vase, executed in African stone.

53 A tazza in white marble, copied from the great Warwick Vase, and a Column in Oriental alabaster, re-

presenting the Trojan Column, both belonging to C. Trebbi.

54 An altar, and two vases in Oriental alabaster, by Della Moda, artist.

[The altar in this group is so contrived as to admit a light by which the beautiful transparency of the material may be seen at night. The vases are as remarkable for their elegance of form as for their delicacy of finish.—D. T. A.]

55 GODWELL, M.—Sculptor.

Group of white marble, representing two boys with a bird's nest.

56 BIENAIMÈ, ANGELO, of Rome, 22 Newman Street—Sculptor.

Marble group, "Love Triumphant."

57 COSTOLI, Professor, Rome.

A favourite spaniel dog, modelled from life, in terra cotta, by Professor Costoli, for the Rev. Mr. Sawford, the owner.





NORTH AREAS, F, 44 TO 48; G. H. 46.

Commissioner in London, Professor PHILIP CORRIDI, 7 Piccadilly.

ALTHOUGH Tuscany has long since ceased to enjoy the industrial superiority which she held during the Middle Ages, when she reckoned among her tributaries some of what are now the most powerful nations in Europe,—she still looks forward to brighter prospects; and believes that the same sort of pre-eminence which she once derived from her skill in the manufacture of woollen and silk fabrics, may again, in some degree, be realized from the valuable productions of her mines and her soils. It is unquestionable, indeed, that Tuscany, owing to her numerous mines, which are daily being discovered, is the Saxony of Italy; while, for her flourishing agriculture, she may be properly compared to Belgium. The grounds for this assertion are to be found upon the tables of this collection, on which are laid out the numerous specimens of minerals, extracted from mines that are now in full work, and from others which, though not worked, are yet well known to contain rich ores. The samples of hard stones, marbles, metallic ores—all so remarkable from their abundance and the great quantity of woods of all descriptions, suited for cabinet-making, and adapted for naval constructions, supplies satisfactory evidence of her natural wealth. The collection of agricultural produce is not so complete as might have been expected; but, boracic acid, of which we are here shown superior specimens, is a produce very much sought for, and of Tuscan origin. Discovered in 1777, it was substituted for the borax of India and Thibet, which had for a long time supplied the trade. It is now extracted, on an extensive scale, under the intelligent superintendence of Count de Larderell, in the volcanic localities of Monterotondo and Montecerboli, in the province of Volterra; and nearly all the manufactories in Europe use it. The qualities of the iron from the rich mine of Elba, many samples of which have been sent to the general Exhibition, are well known. Interesting specimens of iron from that island will be found in the Tuscan division, as well as some of the splendid marbles, granite, cipollino, copper, &c., from the same place. The Tuscan timber is well known to many of the English ship-builders, who are in the habit of using Tuscan in preference to British oak in some departments of ship-building.

Of the specimens of madder-root from the Maremme, the fine samples exhibited are quite equal to the best used in England, and which is imported in large quantities from the Continent. The evidence supplied by the Tuscan manufactories, as to its quality, is satisfactory, especially if we look at the red cotton from the dye-works of an exhibitor of Pisa, who carries on the various processes on a very extensive scale.

Specimens of cotton are exhibited from Ravacchio, near Pisa, where there exists a large manufactory of cotton tissue, which has been the means of improving the whole locality, and of benefiting Tuscany, by substituting for the foreign tissues its own cotton cloth and cashmeres, which are to be seen in the Exhibition, and will bear comparison with the best tissues of the same quality.

The samples of soaps from Leghorn have been brought to much perfection, and represent a very large manufacturing establishment, exporting annually a considerable proportion of its products.

Among the chemical productions forwarded by Tuscany is *santonina*, a powerful vermifuge.

We cannot pass over in silence another eminently Tuscan manufacture—that of straw bonnets. The specimens sent from Prato and Florence are extremely perfect. The Tuscan kinds of straw-plait are considered very superior.

Tuscany has not forwarded many statues to the Exhibition; but those which may be seen—such as “Bacchus reclining,” “Psyche,” “Hagar and Ishmael,” &c.—are sufficient to confirm her celebrity. Those fine statues have been selected by a special Commission. The selection was not made without consulting several men of such qualifications as to warrant the soundness of their opinion. But the artistical taste of the Tuscans is likewise perceptible in their wood-carvings, in their hard-stone mosaic, and in their scagliola and marquetry works.

1 IMPERIAL AND ROYAL TECHNOLOGICAL INSTITUTE,
Florence.

Specimens of sand-stone, from Ceceri, near Florence, Signi, and several other localities in Tuscany.

[Building materials are plentiful in Tuscany, and the "Pietra Macigno" is one of the commonest. It constitutes the principal mass of the Apennines and of the secondary chains which are thrown off from them. The largest supplies of this material are derived from the quarries of Signi, Monte Ceceri, near Florence, &c. The Pian de Novoli, near Fiesole, supplies a kind of Macigno, fit for architectural purposes, on account of the fineness of its grain.

The "Tufo di Livorno" are in great demand for building purposes.

The tufo is a light tenacious stone, extracted from the quarry, and worked with the greatest facility. Some new quarries have been recently discovered among the mountains of Pisa and Lucca.

The "Verrucano Psammettico." This is an extremely fine and hard-grained stone, streaked with pink bands, and compacted by means of a quartzose talc-like cement. It withstands the influences of every kind of weather, and may be advantageously employed in the internal construction of large edifices.]

Specimens of refractory stones from quarries in Tuscany.

The steaschist, or "Pietra da Forni," withstands the action of fire better than any other stone.

The "Pietra Morta," of Goffolina, Pistoia, &c., is the same as the Pietra macigno; but it contains a smaller quantity of lime, and is more porous—it cannot resist the heat of a smelting-furnace.

The "Pietra di Caminino" is used for the construction of kilns moderately heated.

There are also several refractory earths well known in Tuscany, such as those from Lignano del Monte Pisano, the fossil flour of Castel del Piano, &c., which are used for retorts and matrasses.

2 ROYAL MANUFACTORY OF SALT, in VOLTERRA.

Rock-Salt from the salt works of St. Leopold.

Salt obtained from the evaporation of sulphurous waters.

Alum—Specimens of alum dug in Tuscany, and of purified alum.

[Alum, a salt of so great importance in the arts, is found native in Tuscany, and the alum-pits of that country were an inexhaustible source of wealth for the Grand-Duchy, before the greatest part of that which is met with in commerce was artificially prepared.]

Iron—Specimens of iron ore from the Royal Iron-works in the island of Elba.

[The celebrated iron-mines of Elba lie in the southern point of Nera, in Cape Calamita, and extend northwards. The abundance of the ores, the purity of the metal, and the situation of the mines (in the vicinity of the sea), render them a rich and inexhaustible source of wealth for the country.]

Specimens of the copper ores worked in Tuscany, from mines unwrought, but of well-known productiveness.

The samples of copper, No. 1 blue, and No. 2 yellow, are extracted from the mine called the Faggeta, at Miemo, about four miles in a direct line from the celebrated copper-mine at Caporciano, Montecatini, in the valley of Cecina in Tuscany.

The blue mineral is found in the adit level, on the north lode, about twelve fathoms from the surface. The north of the lode is kellas ground, the copper is found in a good blue fluxcan; the south of the lode, serpentine.

The yellow mineral is found in a south lode in the 10, and also in the 30 fathoms level below the adit. The fluxcan is white, the ground serpentine.

The mine authorized by H. R. H. the Grand Duke of Tuscany in 1845, has been worked nearly five years driving galleries (levels); but now having got up a good whim, they are sinking a shaft down on the 20 fathom level on the south lode, where it is expected to find the lode in the 30 fathoms level.

In the latter end of the year 1849, about 12 tons of the yellow copper the produce of this mine, sent to Liverpool, per Nathalie, as a sample, rendered 22½ and sold at 17½ 13s. per ton. In the mean time 5 tons were also sent to Marseilles to be smelted, which rendered 21½ and were forwarded in pigs to Leghorn. The quality was considered very superior.

The blue mineral has not yet been analysed anywhere.

In the opinion of a practical Cornish miner, who now conducts the works, the mine presents the greatest probability of success: the nature of the ground and the direction of the lodes being precisely like those of Montecatini, which is one of the richest mines in Europe.

Lead Ores and Lead—Specimens of argentiferous lead ores worked in Tuscany.

Quicksilver—Specimens of quicksilver, worked in Tuscany, and from mines unwrought, but of a well-known productiveness.

3 Colouring earths.—Specimens of colouring earths and Tripoli earth, from the island of Elba, and other localities in Tuscany.

[There are three classes, or qualities, of Tuscan colouring earths: those obtained from ferruginous and clayey sediments, such as the yellow earth and the Terra d'ombra, of Castel del Piano. Some others have been formed by subterranean waters, which infiltrating in the strata, have abandoned those particles of oxide of iron and manganese, as well as the clay they had carried away in their course. Such was the mode of production of the Terra d'ombra, which is met with near Pitigliano. We have lastly the various kinds of ochre and the oxides of iron, so abundant in the vicinity of the lodes, and presenting gradations of yellow, red, &c.]

4 Sulphur—Specimens of sulphur from the sulphur-mines of Pereta (province of Grosseto); native and purified sulphur.

5 Alum—Specimens of alum from the Royal Alum Pits of Montioni (province of Massa Maritima); crystallized alum from the same alum-pits.

6 MINE OF QUICKSILVER, Levigliani, Province of Pietra-Santa.

Specimens of the ore and the metallic quicksilver.

[In the mountain situate opposite the country of Levigliani, veins of quartz are found, the cavities of which contain metallic quicksilver and crystals of cinnabar. That mine was wrought under the reign of Cosmo III., and belongs now to Prince Poniatowski.]

7 MINE OF CINNABAR, Ripa, Province of Pietra-Santa.

Specimens of the ore, cinnabar, and quicksilver.

[The mine of Ripa, at the entrance of the valley of Seravezza, was discovered in the year 1839. Cinnabar lies

in veins, in talcose schist, and is not unfrequently mixed up with oxide of iron. The works have been carried on for these last ten years by three Companies.

8 MINE OF QUICKSILVER, *Jano, Province of Volterra.*
Specimens of the ore and metallic quicksilver.

[This mine, the property of the Mining Society of Florence, consists of cinnabar included in strata of clayey schist. Cinnabar is one of the ores of quicksilver.]

9 MINE OF QUICKSILVER, *Castellazaro.*
Specimens of the ore and metallic quicksilver.

[This mine had not been in full operation before 1849. It gives employment to 70 men under ground, and produces annually 15,000 lbs. of metallic mercury.]

10 MINE OF QUICKSILVER, *Pian Castagnaio.*
Specimens of the ore, cinnabar, and quicksilver.

[There are few geological documents concerning that mine which is situate on the grounds of Sig. Barbini, and is wrought under the superintendence of Sig. E. Espinassy. The first excavations took place in 1848, and the ores yielded yearly about 9,000 lbs. of metal.]

11 MINE OF QUICKSILVER, *Capita, near Cabalbio, province of Volterra.*

Specimens of the ore and native cinnabar.

[This mine was discovered not long ago, and the works have not been carried on with regularity. It is the property of Sig. Collacchioni.]

12 HALL BROTHERS, SLOANE, & COPPI, *Florence.*

Specimens of the copper ore from the exhibitors' mine at Montecatini, in Val di Cecina. Specimens of the produce of their melting-house at Briglia, near Prato.

[The copper mine of Montecatini is the richest in Tuscany. It was wrought in 1400, and then almost abandoned till the year 1827, when the works were resumed with more spirit. It is extremely productive, yielding a considerable annual produce of pure metal. The proprietors of this mine are also in possession of a large smelting-house at Briglia, near Prato.]

13 VEGNI, Prof. ANGELO, *Sienna.*

Specimens of argentiferous lead ore from the mine of Seravezza, known under the name of Battino. Specimens of the melting.

[The lead mine of Bottino is situate in the Alps, near Seravezza. It is the first mine yielding argentiferous lead that proved a lucrative speculation in Tuscany. It produces sulphuret of argentiferous lead and sulphuret of antimonious argentiferous lead.

The quantity of ore obtained is yearly increasing, and amounted for two years (1848-49) to 2,700,000 lbs. In 1850, the entire produce was upwards of 3,000,000 lbs.

The lead ore is conveyed to the smelting-house by means of a peculiar railway requiring neither steam nor engine.

The smelting is effected at a very low rate of expense, owing to the ingenious disposition of the apparatus and furnaces.

The ores produce—silver at 98 and 98½; red litharge for the composition of oil varnish; yellow litharge; anti-

monious lead, used in Tuscany by type-founders; common lead for the construction of water-pipes and cisterns, &c.]

14 THE METALLO-TECHNICAL SOCIETY, *Florence.*

Specimens of argentiferous lead from the mines of Castellaccia and Poggio al Montone, in the Tuscan Maremme, excavated by the Metallo-technical Society.

[Those mines did not escape the observation and industry of the ancients, who, however, did not penetrate to any great depth; the Metallo-technical Society have, therefore, the certainty of possessing a solid mass of minerals.

There are already 24 beds which yield not less than 100,000 lbs. Tuscan every week. In the mean time other excavations are now preparing, while various preliminary works are in progress. Upwards of 200 men are already employed.

As soon as the Metallo-technical Society have experienced the benefit of the present undertaking, with regard to the first group already worked by the ancients, they intend to excavate the second and third groups of Poggio al Montone, as well as one of the fine veins of the unworked mines of Castellaccia, the surface of which is indicative of some very beautiful lodes.

The Metallo-technical Society, encouraged by their first attempt, have undertaken to erect a small smelting-house, in order to obtain more certain and practical results. The same Society have also other mineral works in hand in the vicinity of Poggio al Montone, on the northern side, where they are in possession of a metallic site of the highest importance to an extensive industrial speculation.]

15 MEJEAN, G., *Florence.*

Specimens of antimony ore from the mines of Montulo and Pereta. Specimens of the melting.

[The principal repositories of antimony are found at Montanto and Pereta, in the Maremme. In the former place the metal is extracted with facility, on account of the lodes lying in the superficial stratum: but the works are carried on underground, at Pereta. The mines yield about 590,000 lbs. per annum.]

16 FREGLIANI, C., *Lucca.*

Quartz steaschist, or refractory stone, for building melting-furnaces; from a quarry in the vicinity of Camaiore (province of Lucca).

Incrustations of the mineral waters of St. Philip baths. Ornamental stones, and stones used in the arts.

Ornamental Stones.—Specimens of marbles existing in various localities of Tuscany; marbles of Seravezza, Santa Maria del Giudice, near Lucca, Monte Rombolo (province of Siena), and the Elba island.

The working of the quarries of Seravezza was completely interrupted towards the end of 1600, solely on account of the decline of the fine arts; although it had yielded a great amount of materials in the times of Michael Angelo and Cosmo I. But the works having been resumed with considerable energy in 1821, through the exertions of the present Grand Duke Leopold II., and under the excellent management of M. Borriani, they soon

prospered in a condition which they are now in, and fine "saccharides," from the marble is prized by sculptors, and is in great demand in France, Russia, and several other countries. The unquestionable superiority of the marble induced the Emperor of Russia to order, now in progress of execution, upwards of one million of roubles for the new Cathedral of the new Cathedral.

Before the year 1821, the period to which we have alluded, the marble trade of Seravezza consisted in the manufacture of a few flooring-flags of common white and blue marbles, from the Cappella mountain, and of some tables. The improved results during the last twenty-five years are almost incredible. There is not a single marble quarry round Seravezza which is not excavated and furrowed everywhere. Children begin to work there when nine years old, and easily earn their livelihood, and adults gain four times as much as they require to keep themselves comfortably. A small market town has sprung up near the sea-shore, where the shipping of marbles take place, and now contains about 500 people, whereas, before 1821, the solitary hut of a fisherman was the only edifice discernible on the spot. The natives have, by degrees, built and manned a small fleet, to carry on a coasting trade between Genoa, Leghorn, and Marseilles. In addition to the white marbles for artistical purposes, which is principally quarried in the mountain of the Altissimo, other magnificent marbles,—coloured and veined,—from mountains in the neighbourhood of Stazzima, are highly valued by the English and the French.

Tuscany possesses several other remarkable quarries; and, although their works are not in full or regular activity, their richness should induce capitalists to give them their serious attention. Santa Maria del Giudice, in the Pisan mountains, is one of these. The excavation was lately begun: the marble is yellowish, sprinkled with large spots, constituting a pudding-stone of exquisite beauty. Several specimens have been sent to the Great Exhibition, and, amongst other articles, the base of a column, the material of which might be used with great advantage for the decoration of buildings.

As to the marbles from the quarries of Campiglia, under the management of Messrs. Perdicarri and Girardot, of Leghorn, it is to be remarked that the mountain where the works are carried on, and which is known under the name of Monte Rombolo, forms part of a series of mountains consisting of a mass of marble, which, according to the opinion of geologists, is perfectly analogous, as regards its age and origin, with the seat of the celebrated quarries of Carrara and Seravezza. The Monte Rombolo marbles possess various and distinct qualities: some are fit for architectural works, and some are excellent for sculptural purposes. Among the latter, artists give the preference to the "Pario," which, on account of its white and bright grain, is considered as being equal to the Paros marble of ancient Greece. The common marble, which can be used for sculptural as well as architectural works, is found in large quantities in Monte Rombolo, and yields blocks of the largest dimensions.

There are three other places, in the vicinity of that mountain, where the works are in full operation, namely, the Mortaio, Guira, and Medici quarries. The declivity of the mountain and the proximity of the Campigliese-road and of the sea afford every facility for transport at a very low price. There is also, near Monte Rombolo, another quarry of blue marble (Bardiglio), which proves a very successful undertaking.

Other quarries, well worthy of notice, are those of Pescaglia, in the Lucan territory. They are situate in the range of the mountains of Hazzema, near Seravezza, and lie behind them. They are four in number, at a distance of about half a mile from each other. They have been visited by artists who speak highly of their richness. They yield a marble, the grain of which has been found excellent, although the superficial structure only has yet been examined. Three bases of columns and several tables have been sent to the Exhibition as specimens of the various marbles of Pescaglia; but, in order to form a correct judgment of these quarries, and of the facilities they afford to work them upon a large scale, it is necessary to see the blocks of red and black marble that have been lately extracted. These are far superior to the specimens sent, as to their colour, the fineness of their grain, the diminution of specks, and the total absence of small capillary veins.

The Tuscan division presents, also, specimens of a very valuable marble, which has been but slightly noticed heretofore, and which is known under the name of "Lumachilla." A specimen of this can be seen in the shape of a large round table, cut out of a piece of marble from the superficial stratum; it is probable, therefore, that finer blocks might be extracted should the undertaking be conducted on a larger scale.

Specimens of the fine marbles of Siena, on the tables of the Tuscan department, confirm their celebrity. They present a great variety. Those known under the name of "Giallo di Siena" and "Eastern Alabaster" are amongst the finest in the Exhibition. Castel Nuovo Dell' Abate, near Montalcino, in the province of Siena, is in possession of the finest qualities of those marbles as regards their colour, transparency, and hardness; properties which make them susceptible of receiving the most perfect polish.

The marbles from other localities are such as those found at Bolgheri and Castagneto, on the estates of Count Délla Gherardesca. Some specimens have been sent of the red, spotted, and veined sorts, as well as a large quadrilateral table, and a small square one.

In addition to its fine marbles, the island of Elba supplies granite, cœpollino, &c. Granite constitutes a portion of the soil of that island, and very remarkable blocks have been procured thence at different periods. A quantity of large columns, and chiefly those in the Cathedral and Baptistery of Florence, were cut out of blocks from the mountains of Elba—principally those of Santo Pietro in Campo. The Grand Duke Cosmo I. caused a piece of granite from that island to be shaped into a large bowl, about 20 metres (nearly 66 feet) in circumference, which was placed in the garden of the Pitti Palace, in Florence, where it may still be seen. The gallery in the cathedral of Ravenna consists of a single block of that granite, and it was the largest in existence until the erection of the granite pedestal to support the statue of Peter the Great in St. Petersburg.

Specimens of lithographic stones, from various localities in Tuscany, and especially from the quarry of Ponte in Neve, belonging to M. P. Giovannini, of Florence.

Collection of every quality of alabastrites, from quarries known in Tuscany.

Hard Stones.—Specimens of chalcedony, and a variety of hard stones existing in Tuscany.

[Tuscany is in possession of very large quantities of *Pietre dure*—hard stones, of tints of various and lively colours, which supply materials for that fine Tuscan manufactory of *Pietre dure* works.

The chalcedony and Arno-pebble constitute the most important materials of that manufactory. These, with agates and *corniole*, are admirably adapted to the representation of branches, flowers, vases, animals, &c., on account of the variety of their tints and their transparency.]

17 AMMANNATI, Capt. T., *Florence.*

Two fragments of tormaline from the Elba island.

18 A lady's collar, made of various hard stones from the island of Elba, and mounted in gold.

19 CAILLON, MAILLAN, & FORMIGLI, *Leghorn.*

Specimens of coals from the exhibitors' coal-pit in Montebamboli, in the Tuscan Maremma.

[Coal beds, or strata, are found in various localities of Tuscany, but the better known are those of Val di Bruna, and Val di Pecora, which were first worked in 1839, under the superintendence of the exhibitors. The Bruna and Pecora coals are not inferior to the best qualities in

point of heat, and for smelting purposes. They kindle easily; in burning they run together into a solid mass, and leave a small quantity of residuum or ashes.

20 SANTI, Dr. CLEMENTE, *Montalcino*.

Fossil flour from Castel del Piano. Floating bricks made with the same flour.

21 QUECCI, T., *Florence*—Manufacturer.

Specimens of varnish from the exhibitor's manufactory:—1. A bottle of copal varnish, and a box of the rosin of which it is made. 2. A bottle of mastic varnish, and a box of the rosin with which it is prepared. 3. A bottle of amar-varnish, and a box of the rosin of which it is made. 4. A bottle of varnish for yellow metals, and a box of the rosin of which it is made. 5. A bottle of varnish for white metals, and a box of the rosin with which it is prepared. 6. A bottle of poppy-oil, and a box of the seeds which supply it.

22 CORREDI, G., *Leghorn*—Manufacturer.

Specimens of sulphate of quina and santonina from his manufactory.

[The barbotina, or semen contra, an *Artemisia*, has been used in Europe for some centuries, as a very active vermifuge; but it was only in the year 1830, that the principle containing the vermifuge property was discovered, it is *santonine*, a substance preferable to the powder or decoction of the *semen contra*, on account of the offensive smell of the latter, while the santonine is perfectly inodorous. This is the more important, as vermifuges are generally prescribed to children.]

23 CONTI, H., & SON, *Leghorn*—Manufacturers.

Specimens of soaps from the exhibitors' manufactory:—1. White liquid soap prepared with olive oil. 2. Marbled soap entirely prepared with olive oil. 4. Rosin soap. 5. Marine soap made of vegetable and animal grease.

24 DE LARDEBELL, Count FRANCISCO, *Leghorn*.

Alabasters, and produce of the *suffioni* of boracic acid, from the exhibitor's estates in Montecerboli Castelnovo, and Monterotondo.

[Boracic acid is found in an uncombined state in many of the hot springs of Tuscany. It occurs sometimes in combination with soda, and is imported in a crystalline form. These crystals are coated with a rancid, fatty substance, and require to be purified by repeated solutions and crystallisations. When pure, these crystals are white, and have an unctuous greasy feel; they are soluble in alcohol, communicating a green tinge to its flame; when fused they form a transparent glass, and have been found to unite with the oxide of lead, producing a very uniform glass, free from all defects, and well adapted for the purpose of telescopes and other astronomical instruments. Borax is much employed in the arts, particularly in metallurgic operations; also in enamelling, and in pharmacy.

Tuscany is indebted to the exhibitor for the extensive extraction of boracic acid. From 1839, the manufacture has yearly improved, more efficacious methods having been resorted to, and an economical process found for the purifying operation. The exhibitor's main object was to procure a ready sale for that produce, by promoting its use in the manufacture of glass:—his efforts have been already successful.]

52 RIDOLFI, Professor MICHELE, *Lucca*.

Colours for encaustic painting, prepared by a peculiar process of the exhibitor's invention; and paintings executed by him to show the effects of the colours.

[The exhibitor has resolved a very highly interesting chemical problem, namely, the solution of copal gum without any fire, or the addition of any kind of oil. His varnish will be found valuable, on account of its hardness and transparency, principally when applied to the ceramic arts. He also succeeded in dissolving elastic rosin, without making use of fire or oils. His third discovery consists in the perfect amalgamation of wax, rosin, and glue with water, for encaustic painting. The exhibitor has also sent some specimens of gum-lac extracted from certain substances, which were thrown away as perfectly useless; it is known in the trade under the name of *lacca ridolfi*. Another kind of lac is the *lacca rosea* (pink lac), which could not be procured hitherto, and will be advantageously used in carnations, as it contains no substance that would alter the tints.]

26 MUSSINI, Professor C., *Florence*.

Colours for painting after a new composition, and specimens of painting on a consistent body of terra-cotta, to show the effects.

[The exhibitor has discovered a peculiar lasting composition, which, being mixed with the colours used for encaustic painting and paintings in fresco, prevents the action of the sun and the effects of the moisture.

The exhibitor does not make use of wax, oil, or varnish, among the ingredients of his preparation, which can be applied upon walls, canvas, wood, and copper, or any other substance. The dirt can be washed off from the painting with a wet sponge.

Their Majesties the Emperor of Russia and the King of Prussia are in possession of several historical pictures executed by this method.]

27 BROCCHI, CAVAL V., *Florence*.

Soft white wheat from the hills of Arcetri, near Florence.

28 SLOANE, F., Esq., *Florence*.

Soft white wheat from the exhibitor's estate at Careggi, near Florence.

[This is the common white wheat, cultivated in Tuscany, from the harvest of 1850. The weight of a *stajo* of wheat is 58 lbs. Tuscan; a *stajo* is equivalent to two-thirds of an English bushel, and the Tuscan pound consisting of 120 g., while the English contains 160 g., it follows that the weight of a bushel of this wheat is 63 lbs. 3 oz., British, that is to say, just as much as the best English wheat.

In 1850 the harvest proved rather indifferent. Corn was plentiful, but of an inferior quality; so that the specimen forwarded to the general Exhibition does not exactly identify the genuine wheat cultivated in the plain of the Arno.]

29 PAOLETTI, F., *Pontedera*.

Stiff wheat for Italian pastes, from the plain of Pisa. Specimens of superfine Italian pastes.

30 RIDOLFI, Marquis C., *Florence*.

Fir-cones and fir-nuts, called *pinoli stiaciamano*, from the exhibitor's estates.

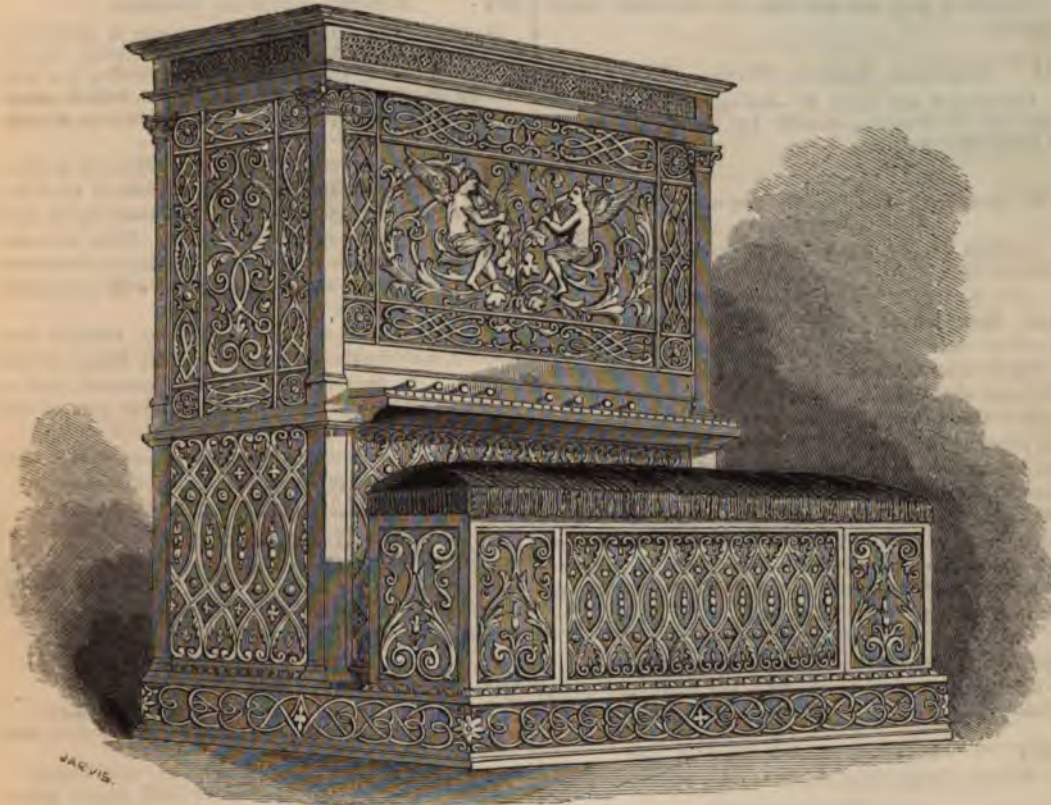
- 31 ORSETTI, C. T., *Lucca*.
Specimens of olive oil, from the exhibitor's estate on the hills of Lucca.
- 32 RUSCHI BROTHERS, *Pisa*.
Olive oil from the exhibitors' estate at Calci, near Pisa.
- 33 PACINI, DOMINICA, *Pisa*.
Olive oil from the exhibitor's estates at Buti, near Pisa.
- 34 SARACINI, CAVAL A., *Sienna*.
Specimens of two different qualities of olive oil, from the exhibitor's estate in Castelnuovo-Berardenga, near Siena.
- 35 PASTORELLI, D., *Archidosso*.
Specimen of corn, called *marzuoto*, supplying straw for bonnets.
- 35A THE IMPERIAL AND ROYAL TECHNOLOGICAL INSTITUTE, *Florence*.
Madder-roots from the Tuscan Maremme. The same roots pounded and reduced to powder.
Specimens of Indian corn, straw for brooms, from Campi, near Florence. Specimens of brooms, such as are used in Tuscany, made of that straw. Collection of specimens of Tuscan woods, used for domestic and naval purposes. Specimen of fir boards from the Royal forests of Cascitino.
- 36 LAMBRUSCHINI, R., *Florence*.
Specimens of cocoons of silk-worms reared by the exhibitor from 1842 to 1850.
- 37 SCOTI BROTHERS, *Florence*.
Raw silk from the exhibitors' spinning-mills.
[The exhibitors' silks are well known and appreciated in London and Lyons, where they find every year a ready sale.]
- 38 DELLA RIPA, L., *Florence*.
Raw silk from the exhibitor's spinning-mills.
- 39 POIDEBARD, N., *Portici, near Florence*.
Raw silk from the exhibitor's spinning-mills.
[The white and yellow silks of the exhibitor have been highly praised, and particularly the former on account of its brightness and perfect whiteness.]
- 40 PETRUCCI, CAVAL C., *Sienna*.
Raw silk from the exhibitor's spinning-mills.
- 41 PIERI, Count T., *Sienna*.
Raw silk from the exhibitor's spinning-mills.
[Raw silk is produced by the operation of winding off at the same time, several of the balls or cocoons (which are immersed in hot water, to soften, the natural gum on the filament) on a common reel, thereby forming one smooth even thread. When the skein is dry, it is taken from the reel and made up into hanks. These operations are performed with considerable precision and speed by the exhibitor's spinning-mills.]
- 42 PANNILINI, Caval. A. G., *Sienna*.
Raw silk from the exhibitor's spinning-mills.
[The excellent quality of this silk has already found for it a ready market amongst the best Tuscan silks, although the exhibitor had introduced it but lately to the trade.]
- 42A RISTORI, M., *Leghorn*.
Potash from the exhibitor's manufactory in the Maremme of Grosseto.
- 43 FRANCESCHINI, T., *Prato*.
Raw silk from the exhibitor's spinning-mills.
[The spinning system of the exhibitor and the superior quality of his produce are equally worthy of a particular notice.]
- 44 RIMEDIOTTI, Madame A., *Pistoia*.
Raw silk from the exhibitor's spinning-mills.
- 45 MORDINI, C. T., *Barga*.
Raw silk from the exhibitor's spinning-mills.
- 46 DAVETTI, LUIGE, *Loro*.
Raw silk from the exhibitor's spinning-mills.
- 47 LEPORI, TOMASINI, *Nudiglioma*.
Raw silk from the exhibitor's spinning-mills.
- 48 RAVAGLI, PAOLO, *Marrudi*.
Raw silk from the exhibitor's spinning-mills.
[The exhibitor has received already several prizes in Tuscany, on account of the great perfection of his silks, the pureness of their colour, their smoothness, elasticity, and clearness.]
- 49 ZAVAGLI, PIETRO, *Palazzuolo*.
Raw silk from the exhibitor's spinning-mills.
- 50 CASUCCINI, Cavaliere FRANCESCO, *Cheanciana*.
Raw silk from the exhibitor's spinning-mills.
- 51 SAVI, Professor PIETRO, *Pisa*.
Raw silk from silk-worms reared upon the leaves of the Philippine mulberry.
- 52 COLLACCHIONI, GIUSEPPE, *Borgo San Sepolcro*.
Three merino fleeces, from flocks belonging to the exhibitor.
- 53 The Manager of the Alberese Estate, belonging to H. I. and R. H. the Grand Duke of Tuscany :—
Three fleeces of cross-bred merino sheep, from the sheep-folds of the Alberese.
- 54 The Manager of the Badiola Estate belonging to H. I. and R. H. the Grand Duke of Tuscany :—
Three merino fleeces from the sheep-folds of the Badiola.
- 55 TURCHINI, LORENZO, *Florence*—Inventor.
Machine for carrying heavy burthens, which the exhibitor has named a Panattoforo.
- 56 PIETRO, EUGENIO, *Lucca*—Inventor.
Model of a locomotive with an articulated system, invented by the exhibitor.
- 57 GONNELLA, Professor TITO, *Florence*—Inventor.
Machine for measuring plane surfaces, executed under the exhibitor's direction, by order of H. I. and R. H. the Grand Duke of Tuscany, to whom it belongs. Invented by the exhibitor.

58 DUCCI, A. & M., BROTHERS, *Florence*—Inventors.

Organ with the counter bass, *amisone*, 16 feet high, of a new construction, presented by the exhibitors as their invention; the case carved by Mr. A. Barbetti, of Siena,

and gilt by Mr. Vincenzo Stolgi, of Florence. *Baristate*, an instrument adapted to the bass of an orchestra, and lately invented by the exhibitors.

This organ is exhibited in the annexed cut.



Messrs. Ducci's Organ, with Contrabasso Amisone.

[This organ, of diminutive size, possesses the same tone as one eight times larger. Its chief peculiarity is the position of the lower notes, which are placed in the stool on which the player is seated. These lower notes are placed in one single pipe, which gives the lowest C, with 16 feet, and the successive tones of the chromatic scale by means of eleven holes. To obtain the tone of a large organ, the builders have altered the form and disposition of the pipes, and invented a new species of mechanism. The instrument can be easily removed as it is, or it may be taken to pieces, packed up, and carried anywhere, just like a piano. This new instrument gives the power of uniting all the lower notes in one single pipe, which may thus lead to new mechanical improvements, and open sources of acoustic phenomena.]

The *Baristate*.

[This instrument can descend two octaves below



to produce such a note, through the ordinary means, the length of 32 feet would be required, besides some mechanical means to blow it. In order to avoid this difficulty, the inventors have substituted a tube 8 feet long, which produces the same effect. It contains six, or even

twelve semitones, besides possessing a vibration equal to that of the double bass, and the advantage also of being tuned to any pitch. This instrument has been tried successfully in Florence, with a full orchestra.]

59 CUYERE, Madame, *Florence*.

Specimens of combs for silk weaving, from the exhibitor's manufactory in Florence.

60 PADREDDI, F., *Pisa*—Manufacturer and Dyer.

Various cotton fabrics from the exhibitor's manufactory. Specimens of cotton dyed in red, from the exhibitor's dye-works in Pisa.

[The exhibitor was the first who introduced power-looms in Tuscany, towards 1848. The exhibitor is also the owner of dye-mills of importance, where 1600 lbs. of thread are dyed weekly.]

61 MANETTI BROTHERS, *Navacchio, near Pisa*—Manufacturers.

Various cotton flax and mixed tissues. The exhibitors' establishment is one of the most eminent in Tuscany, and produce various textile fabrics of the highest order.

62 **FRANCESCHINI, FELICE, Prato—Manufacturer.**

Blankets in floss-silk tissue fabrics from the exhibitor's manufactory in Pisa.

63 **RIVA & MAFFEI, Florence—Manufacturers.**

Brocade of gold and silk, from the exhibitors' manufactory.

64 **CATANZARO, MARIANO, Florence—Manufacturer.**

Cotton and silk tissue for carriages. Length of the specimen 10.52 metres, breadth 127 centimeters (32 feet 8 inches by 4 feet).

65 **CINI BROTHERS, St. Marcello, near Pistoria—Manufacturers.**

Endless felt for paper-making, from the exhibitors' manufactory.

[The felts for paper-making, specimens of which have been forwarded to the Exhibition, are neither woven as those used up to the present time have been, nor sewn, in order to connect the ends; but they are manufactured simply by means of felting the wool, and we believe that this principle for manufacturing felt applied to paper making, was first brought into use at St. Marcello,—an operation quite different from the woollen manufactures, and pregnant with peculiar difficulties. Experience has proved, after a period of five years, in the paper-mills of St. Marcello, that these felts are as good for use as those woven in the French and English manufactures, and that they last longer without being deformed or torn.]

66 **VYSE & SONS, Prato—Manufacturers.**

Plaits and straw bonnets, from the exhibitors' manufactory.

66A **MARRETI, —, Mezzana, near Pisa.**

A spring hedge-bill of elaborate workmanship.

67 **NANNUCCI, Madame AGNES, Florence—Manufacturer.**

Straw bonnets from the exhibitor's manufactory; plaits and various other works in straw.

68 **CINI BROTHERS, St. Marcello, near Pistoria—Manufacturers.**

Specimens of machine papers, from the exhibitors' manufactory; wove letter-press paper; white laid paper; azure laid paper.

[The paper-mills of St. Marcello, produce papers of every quality. Five specimens only have been selected for the general Exhibition, from papers of a particular description, the making of which is attended with several difficulties.

These are specimens of papers produced by machinery, namely, two of the wove, and three of the laid sorts. One of the former (the foreign post wove) is well sized, although very thin, and without too much transparency; in the latter, the execution of the mark, as in hand-made paper, deserves notice, which lies invariably on the same place, by means of a particular process invented by the exhibitors, and applied most successfully to the manufacture of large quantities.

The two specimens of laid paper of the large size, are noticeable on account of the accuracy and uniformity of the execution, as well as the colouring of the blue sam-

ple. As regards the third specimen, of an inferior quality, its resemblance to hand-made paper is considerable, both as to the mark and the edges, which are produced by means of a peculiar machinery.]

68A **MARIOTTI, SILVESTRO, Pontedera.**

A sword with the hilt and ornaments in silver-gilt, after the electro-galvanic process; a well-finished, chased work, executed by the exhibitor, and consisting in a hilt, and the design of the sheath in silver-gilt, entirely ornamented with arabesques, symbols and chimeras, according to the style of the 16th century.

[The pommel represents the head of Minerva, in alto-relievo. There are two shields on the sides of the hilt; in one of which a figure of Justice has been chased, and on the other, a lion rising with the sun. These two emblems are remarkable on account of the diminutiveness of their dimensions; they are surrounded with ornaments of fine workmanship.

The guard, of an irregular oval shape, contains two trophies, emblematic of War and Justice, around which ornaments in basso-relievo have been designed, and a winged monster with two heads, the upper part of the space being occupied by a figure of a swan.

The sheath of buffalo's horn, is ornamented with arabesques, the design of which differs on both sides.]

69 **RAFFELLI, P., & SON, Leghorn.**

Wrought coral neck-lace, carnation or pink (Scherzoso) coloured; consisting of 73 round corals with a clasp, 7½ ounces in weight. An engraved brooch. A pair of earrings à la Pompeienne, consisting of ten engraved pieces.

69A **CALAMIA, Prof., Florence.**

Twelve cases containing the following preparations:—

- 1 Male torpedo: digestive, circulatory, branchic, and electric organs.
- 2 Male torpedo: digestive, genital, and renal organs.
- 3 Male torpedo: sub-cutaneous muscles, mucous tubes, and electric organs.
- 4 Inferior surface of the integument, displaying the distribution of the mucous tubes of a torpedo.
- 5 Female torpedo: muscular system and genital organ.
- 6 Digestive, renal, and genital organs. Spiral intestinal valve, and hepatic vessels of a female torpedo.
- 7 Female torpedo: nervous system and electric organs.
- 8 Magnified models of the torpedo's brains, 3 diam.
- 9 Torpedo: magnified models of the structure of the galvanic columns of the electric organs, 12 diam.
- 10 Torpedo: magnified model of the ultimate distribution of the vessels and nerves of one of the engravings of an electric column, 400 diam.
- 11 Torpedo: magnified model of the mucous tubes and sarvian corpuscles, 15 diam. Distribution of nerves on the bulb of a mucous tube, 120 diam.
- 12 Torpedo: renal system, basis of the brains, ovum, embryo, and magnified model of the blood, 100 diam.

70 **NARDI BROTHERS, Montelupo, near Empoli—Manufacturers.**

Chemical apparatus in glass, and other objects for domestic and commercial use, from the exhibitors' manufactory.

71 **CANTAGALLI, L., Florence—Manufacturer.**

Stove in terra cotta, from the exhibitor's manufactory. This stove is represented in the cut annexed.

[This stove is a kind of Prussian chimney with its diaphragms, and surmounted by an elliptic column. The



67.

MOSAIC TABLE TOP.



JARVIS



column is fastened to the chimney, and the oval lid to the stove, by means of a certain diluted earth which is sent by the manufacturer.

A vase, or bust, can be placed on the top of the stoves provided that it be not too heavy.]



Cantagalli's Terra Cotta Stove.

72 GINORI, Marquis L., *Florence.*

Several articles in china, from the manufactory on the exhibitor's estate at Doccia, near Florence. The "Rape of the Sabines," after the original painting by Bologna:—"Galileo," from the original by Professor Costoli: Titian's "Flora," reduced to a small picture, from the original painting. A cup, with the portrait of Rubens. A large vase, with a view of the exhibitor's manufactory and country seat.

[All these articles have been executed by young men, sons of the workmen employed in the establishment, who are instructed at a free school, founded and supported by the exhibitor.]

73 ROYAL FOUNDRY, *Follonica.*

Specimen of cast-iron of the first melting; a tabernacle, the property of H. I. and R. H. the Grand Duke of Tuscany.

Another specimen of cast-iron of the first melting, a flower basket.

74 BARBETTI, A. *Siena.*

Grand set of ornamental furniture, in walnut, for a drawing-room, consisting of a console and frame intended for a glass plate, the latter supported by two columns, and terminating in the richest ornaments; a work of an exquisite carving, the architecture in the style of Baldassarre Peruzzi. Small writing table, carved in walnut, revolving upon its basis, after the Greek style.

75 LOMBARDI, ANGELO, *Siena.*

Small frame in wood, with ornaments and figures carved by the exhibitor.

76 BARBETTI, RAPHAEL, *Siena.*
Frame in walnut wood, carved by the exhibitor.

77 BARBETTI, RINALDO, *Siena.*
Basso-relievo, carved by the exhibitor.

78 BIGOTTI, LUIGI, *Lucca.*
Two bassi-relievi in ivory, carved by the exhibitor. These are of elaborate execution. One of them represents the "Madonna della Seggiola" by Raffaello dell Urbino; the other is in the shape of a crescent with figures and ornaments of exquisite workmanship.

79 MARCHETTI, LUIGI, *Siena.*
Frame for a glass-plate, in walnut wood, carved by the exhibitor. It is supported by two columns placed on two crouching lions.

80 BARBETTI A., *Siena.*
Dressing-table carved in walnut after the Greek style.

81 BONAIUTI, C., & SONS, *Florence*—Manufacturers.
A study-room chair in the rock wood style. An imitation of china in carved woods, ornamented with gold, and contours, and covered with green woollen velvet.

82 DUCCI, ANTONI, *Florence.*
Architectural model, executed by the exhibitor to show the application, in marquetric, of walnut sheets to cornices, however complicated, without being cut at the angles.

Joining of sliding-rules, with grooves very complicated and difficult. Cutting of the walnut wood by means of a new machine, invented and executed by Messrs. A. and M. Ducci, of Florence.

83 PASQUI, PIETRO, *Arezzo.*
A cornice in mountain ash, with outlines in ebony, carved by the exhibitor.

84 FALCINI BROTHERS, *Florence.*
A large chair, after the style of the 16th century, inlaid in woods of several colours, forming a rich design of flowers and ornaments.

85 BONAIUTI, C., & SONS, *Florence.*
A lady's writing table in black ebony, inlaid with metals and woods, of various colours, in imitation of mosaic work.

85A POLLI, F., *Florence.*
The top of a table inlaid with figures, the Four Seasons, and ornaments after the style of Raffaele.

86 REGNINI, EMIDIO, *Chinsi.*
Octagon top of a table, inlaid in woods of several colours, by the exhibitor, forming a design of flowers and various ornaments. This table-top is represented in plate 164.

87 MAGGIORELLI BROTHERS, *Florence.*
Three table tops, with veneering of Tuscany woods.

88 MARTINELLI, FRANCESCO, *Leghorn.*
A rectangular ebony table, supported by ornamented carved feet, with a top inlaid in various woods and mother-of-pearl.

89 CORREDI, P., *Leghorn.*
A square table of angelica with marquetric; bunch of flowers at each corner, in the centre a large circle in blue silk velvet.
This table consists of a hard wood frame covered up with a veneer of satined angelica. The central disk is

executed in blue silk velvet. The bouquets at the corners are inlaid in angelica and composed of various-coloured woods. The bands, one of which contains a small drawer, the feet and casement are executed in the same style; but the capitals placed upon the feet (with inlaid insects), the tips of the feet (ornamented with a leaf), and the vase that joins the casement, consists of solid wood.

The small band round the table is made of pink ebony. Several woods have been used in the inlaid-work with their natural colour; some others have been dyed, but they can never alter, in consequence of the colouring substance penetrating the whole parenchyma.

- 90 MAZZETTI, AURELIO, *Chiusi*.
A frame, inlaid in woods of various colours.
- 91 NOBILI, Cavaliere, *Lucca*.
A base of a column in coloured marble, from the quarries of Santa Maria del Giutice, near Lucca.
- 92 GUIDOTTI, GIUSEPPE, *Lucca*.
Three bases of columns in coloured marble, from the quarry of Pescaglia, near Lucca.
Three tables, two round and one rectangular, in coloured marble, from the same quarry.
- 93 GHIRARDESCA, GUIDO DELLA, Count, *Florence*.
Two tables in red marble, from a quarry belonging to the exhibitor in the Tuscan Maremma.
- 94 NANNI, LEONARDO, *Prato*.
A round table in marble, called "Verde di Prato," from quarries belonging to the exhibitor near that town.
[Amongst the plutonic rocks so abundant in Tuscany the serpentine, from Monte-Ferrato, near the town of Prato, is known as *Verde di Prato*. Mr. Leonardo Nanni has presented some fine specimens of that marble from quarries under his management, which now yield blocks sufficiently large to cut statues, vases, or columns of nearly 1½ cubical metre in diameter. The quality of the marble can be ascertained from a round breakfast service, ¾ metre in diameter. The quarries are in full operation, and any quantity of marble can be obtained from them.]
- 95 MAFFEI, Cavaliere GIUSEPPE, *Volterra*.
A base of a column from the quarry of Monte Rufoli, near Volterra, belonging to the exhibitor. The base is the property of H. I. and R. II. the Grand Duke of Tuscany.
- 96 PANCIALICHI, Marquis, *Florence*.
A table of marble, called "lumachella," from the exhibitor's quarry near Florence.
Two small tables, in very hard marble, from the torrent Marnia, near Vallombrosa.
- 97 GIOVANNINI, PASQUALE, *Florence*.
A specimen of sculpture in lithographic stone, from a quarry on the exhibitor's estate.
- 98 IMPERIAL & ROYAL TECHNOLOGICAL INSTITUTE, *Florence*.
A table of Cipollino marble, from a quarry in Elba Island.
A broccatello table, from the quarry at Caldana, near Campiglia.
A table of marble, called "Porta Santa," from Caldana di Ravi.
A table of eastern alabaster, from the quarry of Albivire.
Two small columns of broccatello of Caldana, with the capitals in yellow marble from Siena.

A small column of light bardiglio, from the quarries of Campiglia, belonging to M. Michele Ristori.

- 99 GIOVANNINI, P., *Florence*.
Lithographic flag-stones from the exhibitor's quarry, at Folle, inlaid with stucco, very hard and resisting any kind of rubbing. A specimen of sculpture from that stone, representing a little orphan girl, executed by M. Emanuel Panini.
- 100 FERRIGINI, GIUSEPPE, *Leghorn*.
White cable, from the exhibitor's rope manufactory in Leghorn. This cable can be used as a tackle; when placed, vertically, it withstands a weight of 15,188 lbs. (French). Its own net weight is 229 lbs. (French).
- 101 PARLANTI, ERSILIA, *Borgo a Buggiano*.
A very elaborate silk embroidery, consisting of several designs irregularly disposed, but producing a striking effect.
- 102 TONTI, LUIGI, *Florence*.
Five canes in small pieces of horn, of various colours with tops in gilt bronze.
- 103 CERU, CARLO, *Lucca*—Manufacturer.
Horse's bit of steel, invented by the exhibitor.
- 104 CIONI, GASPARO, *Empoli*—Manufacturer.
A lock of particular mechanism, executed by the exhibitor.
- 105 DUPRE, Prof. A., *Florence*—Sculptor.
"The Curse of Cain after having murdered his brother Abel." A marble statue by the exhibitor, and cast in bronze by Mr. C. Papi. The property of H. I. and R. H. the Grand Duke of Tuscany, and cast by his order. "Abel murdered by his brother Cain," a statue in marble by the exhibitor, and cast in bronze by Mr. C. Papi. The property of H. I. and R. H. the Grand Duke of Tuscany, and cast in bronze by his order.
- 106 COSTOLI, Prof. ARISTODEMO, *Florence*—Sculptor.
Christopher Columbus unveiling America to the three parts of the world then known, displayed according to their geographical order, forming a group of four figures, modelled in plaster by the exhibitor, and cast in bronze by Mr. C. Papi; the property of H. I. and R. H. the Grand Duke of Tuscany.
- 107 VILLA, L., *Florence*—Sculptor.
Hagar giving drink to her son Ishmael, a group in marble, executed by the exhibitor.
- 108 NENCINI, Prof., *Florence*—Sculptor.
Bacchus, a statue in marble of Seravezza, by the exhibitor. The statue represents Bacchus reclining in a state of intoxication.
[The plastic model of this work was sent in 1838 to the public Exhibition in Milan, and the Academic Board of that town decided to put it up for competition among the pupils. The author had his name inscribed on the Academicians' list.]
- 109 CHERICI, GIUSEPPE, & SONS, *Volterra*.
A large alabaster vase, after the Etrurian style; executed in the exhibitors' manufactory in Volterra, and representing—1. Apollo in his quadriga, drawn by four horses, and preceded by Aurora. This vase is represented in the annexed illustration. 2. Justice rising to the heavens. The vase is placed on the fust of a column of the Tuscan order.



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167.

SCAGLIOLA TABLE TOP. TUSCANY.

11

11



Cherici's Alabaster Vase.

110 FRECCIO, PIETRO, *Florence*—Sculptor.

Psyche, a statue in marble, with a pedestal, executed by the exhibitor. Psyche has received the fatal vase from Venus, with injunction not to open it. But the lovely girl, in spite of Cupid's warnings, is eager to satisfy her curiosity, though she seems to hesitate.

111 ROYAL MANUFACTORY, known under the name of the IMPERIAL AND ROYAL GALLERY OF HARD-STONE WORKS.

A mosaic table in hard pebbles, of a circular form, and a diameter of 1.75 metre, (5 feet 5 inches, English) upon a ground of eastern lapis lazuli; the table belonging to H. I. and R. H. the Grand Duke of Tuscany. The centre represents Apollo in his quadriga, surrounded with flowers, supported by clouds, and drawn by four steeds. It is circumscribed by a wreath of roses around its nine compartments (adorned with contours of acanthus leaves), which contain the appropriate emblems of the muses: a large circular band represents 36 bouquets of various flowers, the whole surrounded by another band containing 135 small ornaments, forming an elegant contour.

112 BUONINSEGNI BROTHERS, *Florence*—Manufacturers.

A round table in scagliola; from the exhibitors' manufactory. The table represents a wreath with a bouquet in the centre, composed of various flowers tied together with a white ribbon. The roses in the centre are cut out of pink chalcedony from Monte Rufoli; lapis lazuli has been used for the convolvulus, and turquoise for the pansies. The leaves are represented with Arno pebbles. The execution of the whole is highly elaborate. This table-top is represented in plate 167.

113 BIANCHINI, GUETARNO, *Florence*—Manufacturer.

A round table in mosaic of Florence: the table represents several bouquets. In this elaborate work the exhibitor has been anxious to introduce some fine stones, not generally known, such as the *Arno pebbles*, with the Florentine lily in the centre.

114 DELLA VALLE BROTHERS, *Florence*.

A rectangular table in scagliola, with various ornaments, and entirely inlaid, in imitation of works of hard

pebbles, executed in the exhibitors' Scagliola Works, in Leghorn. This slab is represented in plate 168.

A round table in scagliola. The centre tableau represents Galileo visited by Milton in the prison of the Inquisition. The azure zone around contains the signs of the zodiac. The four statuettes executed on medals represent Astronomy, Physic, Mathematics, and Geometry; and the busts some of Galileo's most celebrated scholars. The figures of the children, executed on azure medals, embody four of the inventions and discoveries of the great philosopher, viz., the Pendulum, the Thermometer, the Measuring Compass, the Telescope, and the Satellites of Jupiter, otherwise called the *Medicean Stars*. The octagonal vignettes in *Chiaroscuro*, represent the cities of Pisa, Florence, Venice, and Rome, in one or other of which the principal events of Galileo's life occurred. The ornamental part of the table is *à la Raffaël*, and in the interstices may be discovered the globes, celestial and terrestrial, the armillary sphere, the planetary system of Copernicus, of which Galileo was a defender, the sextant, the multiplicative circle, the Theodolite, and the mural quadrant, all instruments connected with the subject of the table. This table is formed of *scagliola* on a base of marble. Each colour composing the ground and the figures of the centre tableau is first inlaid in a single piece and then shaded. The lights (*Parti chiari*) are also all inlaid. The central part of the ornamental work, which is without shades, is inlaid throughout. The rest of it is made like the centre tableau by inlaying large pieces, and afterwards shading them. The figures of children, representing the pendulum, &c., are inlaid likewise *en masse*, and afterwards shaded. The four octagonal vignettes are painted, and the polish on the surface is produced naturally from the materials, as in marble, without the use of any varnish whatever. The rectangular, or oblong table, is entirely inlaid in imitation of *Pietra dura* work. This table-top is represented in plate 182.

A vase in scagliola, entirely inlaid, after the Etruscan style, executed in the exhibitors' establishment.

The vase is made after a pattern of those found in the Roman Campagna, commonly called Etruscan, and is made of *scagliola*, the same material as that employed in the manufacture of the tables. The group of figures which adorn the front represents a concert between Cupid and the Graces. The Cupid is copied from an ancient vase in the Hancarville collection. The three figures on the obverse side are musicians, taken from a vase painted in the works of Passeri.

These figures and ornaments are all inlaid in the various curves of the vase, in order at once to demonstrate the difficulties of the work and the solidity of the material. The polish is natural, as in marble, without the use of any varnish. These vases can be had of any size, shape, or colour.

115 MAZZETTI, A., *Chiensi*.

A quadrilateral cornice with the gorge reversed, in black ebony, inlaid with wood of various colours, and executed by the exhibitor.

116 PAPI, C., *Florence*.

A large basket of flowers, taken from nature,—in cast; with the stand, also from nature, and in a single piece. The whole composed and cast by the exhibitor. The cast consists of several species of leaves and flowers, and it has been executed from the design without any previous operation or modelling. Then, the stay-supporters having been removed, the artist did not apply the file or chisel to perfect his work.

The founder, Clemente Papi, who, after repeated trials, had revived in Tuscany the art of casting bronze statues and bassi-relievi, has also succeeded in taking, with an equal perfection the cast of other natural objects. The basket does not contain apples and other fruits of the same shape; these might have been more agreeable to the eye, but the difficulty was too trifling for the artist.

This specimen of casting is exhibited in the annexed cut.



Papi's Flowers and Stand of Cast Bronze.

117 GIUSTI, P., *Siena*.

A medallion in walnut-wood, carved by the exhibitor.

118, 119 ROMOLI, LUIGI, 6 *York Terrace, Chelsea*.

A rectangular table of scagliola, in imitation of ebony and ivory graving. The central group represents a subject from the Anthology, "The Sale of Loves." The borders are in flowing arabesques.

A round table, in mosaic work and plaster, in imitation of *Pietra dura*. The borders of various flowers are executed in exceedingly brilliant colours.

A carved pipe tube of black ebony.

120 ROMOLI, LUIGI, *Florence*.

A cherry-stone, representing on one side a wild bear hunt, on the other twenty-five heads.

121 MARCHETTI, L., *Siena*.

A casket, carved in wood by the exhibitor.

The casket is made of the wood of the service-tree, and in shape octangular, or oblong, the corners truncated.

The lid is surmounted with a recumbent female figure, a personification of England, leaning with her left hand on an escutcheon of the United Kingdom, and holding in her right hand an olive-branch,—instruments of industry, trade, and navigation, lying scattered at her feet. Moresques adorn other parts of the lid, and in two circlets like medallions, are grouped the emblems of industry and commerce.

The front and back of the casket are each divided into five panel-like compartments, bordered with ivory, of which compartments the two, on each side, broader than the rest, exhibit, in basso-relievo, prominent events in the history of England;—and the others, candelabra of an elegant design, and exquisitely executed.

Of the two historic compartments of the front, the subjects are, Julius Cæsar having just landed on the British shore, in the year 52 B.C., with a torch in his hand to indicate the civilization of ancient Rome; the other represents King John signing Magna Charta, at Runny-



166. AN INLAID SLAB FOR A TABLE. MESSRS. DELAVALLE BROTHERS, LEGHORN, TUSCANY.



Vertical line of text or markings on the left side of the page.

mede, in the year 1215, at the requisition, and in the presence of the barons of England. On the other side, Sir R. Peel proclaims Free-trade, a broken sword lies at his feet as an emblem of the means the great statesman had first used as a defender of the protection system, which he afterwards disapproved and abandoned. Lastly, Religion, kneeling at the feet of our Saviour, receives the writings of the Evangelists.

Each end of the casket is divided into three other compartments, the centre being the largest. On the left, Queen Victoria drops garlands on the earth, and the opposite side represents Prince Albert. The candelabra are repeated in the four smaller compartments.

A triton, in full relief, resting on a hippocamp, occupies each of the four truncated corners.

The lock of the casket was constructed by Sig. Pasquale Franci, and the velvet used for the lining was manufactured by Sig. Giuseppe Masotti, both of Siena.

122 FONTINA, ANDREA, *Carrara*—Inventor and Manufacturer.

A clarinet and a German flute, made in white marble.

The tones produced are of great mellowness and perfection.

A highly finished copy on porcelain, enamelled by Baldissini, after Titian—"Venus Reposing."

A large tazza, surmounting a truncated column, on party-coloured marble.

A carved vase, nearly 4 feet in height, of white alabaster.

A massive bust of Lorenzo il Magnifico, executed in white marble, and having the arms of the Medici, sculptured on the plinth, executed by Professor Costoli, after the original in terra-cotta, by Michael Angelo. (Property of the Rev. Mr. Sanford, exhibitor.)

A statuette of Galileo, in the costume of his age.

123 SERAFINO BUONAIUTO, *Florence*.

A fine plate, in a frame, executed in the taste prevalent at the beginning of the seventeenth century. It is composed of large lozenge and rhomboidal-shaped pieces of looking-glass, regularly cut, and arranged in a border of considerable depth, after a design by the exhibitor. This glass reposes on a table, carved and gilt in the Louis XIV. style, by Nosotti of London.





NORTH AREA, F. G. H. 47, 48; I. 48.

Royal Commissioner in London, CHEVALIER LENCISA, 124 Mount Street, Grosvenor Square.
Agents, Messrs. LIGHTLY and SIMON, Fenchurch Street.

NEARLY one hundred exhibitors represent the industry of Sardinia. Their contributions afford a very complete view of the direction in which this activity is principally impelled, and also of some of the materials upon which it is exercised. The mineral specimens include some spathic iron ore, and rough and manufactured slates. The pharmaceutical specimens indicate a refined state of chemical manufacture among these exhibitors. They comprise several alkaloids, the preparation of which involves a considerable amount of scientific knowledge and manipulative skill. Quinine, phloridzine, ergotine, and santonine, are among these preparations. The wools exhibited are specimens selected from valued herds. Coarse black wools are also shown, and garments made from them. Samples of raw and thrown silk, and fine specimens of the products of the velvet looms of Turin and Genoa, form a valuable part of this collection. The elegant articles in filigree and chased silver will receive notice, together with the ornamental furniture and decorative fittings sent from Turin and Genoa. Several other objects of more or less interest will present themselves among these articles.—R. E.

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| <p>1 GRANGE, FRANCIS, <i>Randens, near Aiguebelle (Savoie)</i>—Manufacturer.
Specimens of spathic iron from the mines of St. Georges des Hurtières, and of white crystallized casting for the manufacture of steel.</p> <p>2 ZOLESI, STEPHEN, <i>Chiavari</i>.
Manufactures in slate—viz., a round table, polished and varnished; polished school slate; roofing slates.</p> <p>3 PIANELLO, DOMINIC, <i>Chiavari</i>.
A rough slate fourteen decimetres (5 ft. 6 in.) square.</p> <p>4 SELOPIS BROTHERS, <i>Turin and Brozzo (Ivrée)</i>—Manufacturers.
Specimens of sulphuric, nitric, and hydrochloric acids. Sulphates of iron, copper, alumina, and potash. Pyrites of <i>Brozzo</i>, with sulphate of iron prepared from it.
Flowers of brimstone, and sulphur in the mass, obtained from the roasted pyrites.
Residuum from the washing of roasted pyrites.
[When pure volcanic sulphur cannot be obtained cheaply, the roasting of pyrites, which is a native bisulphuret of iron, is resorted to. In order to expel some of the sulphur of this compound, it is merely necessary to heat it carefully in closed vessels, when the sulphur sublimes in the usual form. The residuum is a sulphuret of iron, which can be converted into sulphate of iron or copperas. The specimens exhibited illustrate these various processes.—R. E.]</p> | <p>5 GIRARDI BROTHERS, <i>Turin</i>—Proprietors.
Specimens of colseed, castor, linseed, and walnut oil.</p> <p>6 ROSSI & SCHIAPPARELLI, <i>Turin</i>—Manufacturers.
Specimens of stearine candles; soap made from oleic acid; pure stearic acid; sulphate of magnesia, and carbonate of magnesia, native of Piedmont (<i>Giobertite</i>).</p> <p>7 ALBANI BROTHERS, <i>Turin</i>—Manufacturers.
Matches for chemical lights; specimens of gelatine extracted from bones; soda soap prepared from the fat of bones; concentrated sulphuric acid for the manufacture of phosphorus; nitric acid; nitrate of barytes, prepared from the sulphate of barytes of Savoy; a retort made of the broken clay of the Castellamonte for the preparation of phosphorus.</p> <p>8 GIROD, M., & Co., <i>Aiguebelle</i>—Manufacturers.
Gallic acid, extracted from chestnut wood.</p> <p>9 GARRISSINI, PETER HYACINTH, <i>Toirano, Genoa</i>.
Samples of orange wine.</p> <p>10 SALUCE, M.—Manufacturer.
Specimens of various essences; peppermint, crystallized; absynthe, completely colourless; noyau, crystallized.
Mastic, insoluble in alcohol.</p> <p>11 CALLOUD, FABIAN, <i>Aunecy</i>—Manufacturer.
Phloridzine, extracted from the bark of the pear-tree, intended as a substitute for quinine.</p> |
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- Santonine, the vermifuge principle of the *semen contra*.
 [The medicinal substance called Semen-Contra is obtained from plants belonging to the family of composites. The artemisias of several species furnish the principal portions of this drug. The flower-head is the part of the plant employed. Santonine is a name given to the active principle of the drug, which is valued as a vermifuge.—R. E.]
- Morphine, extracted from poppies grown in Savoy.
 Glucosate of soda, obtained from the syrup of mulberries; the same obtained from the syrup of diabetes.
 Beberine, proposed as a substitute for quinine.
- 12 **BONJEAN, JOSEPH, Chambery**—Manufacturer.
 Pure ergotine in phials, with a small model of an apparatus for the preparation of this medical product; six phials containing specimens of the material in various stages of the manufacture, from the pulverization of the ergoted rye to the pure ergotine.
- 13 **DUFOUR, LAURENCE, Genoa**—Manufacturer.
 Samples of sulphate and citrate of quinine.
- 14 **PROFUMO, JOSEPH, Genoa**—Manufacturer.
 Specimens of white lead.
- 15 **SIMONE MANCU, LE CHEVALIER, Sassari**—Proprietor.
 Olive oil made in 1849 by the ordinary method; olive oil of the best quality made in 1849 by simple compression.
 [Olive oil is obtained from the fruit of *Olea Europea*. It is ordinarily procured by crushing the fruit, and then submitting it to pressure. The first product is the finest, being the virgin oil. The oil obtained subsequently is less pure, and has a stronger odour and taste. Hitherto Sardinia has not been distinguished for the quality of this product.—R. E.]
- 16 **SCOLA, BERNARDIN, Turin**—Manufacturer.
 Gelatine capsules for medical substances, filled with balsam of copaiba.
- 17 **PALLESTRINI BROTHERS, Villabiscossi (Lomellina)**—Proprietors.
 Specimens of rice cultivated in Piedmont.
- 18 **BLONDEL GASTON, & Co., Turin**—Proprietors.
 Specimens of various qualities of rice.
- 19 **BO, AUGUSTUS, Turin**—Manufacturer.
 Specimens of mineral colours; coloured lakes and inks.
- 20 **PREVER, JOHN JAMES, Turin**—Proprietor.
 Specimens of undressed wool from a flock of 2000 Merinos.
 [The wool of this peculiar breed of sheep has long been celebrated, and is principally employed in the manufacture of articles of clothing.]
- 21 **BRUN BROTHERS, Pignerol**—Proprietors.
 Specimens of washed wool from a flock of 2000 Merinos.
- 22 **CALVI, JAMES, Genoa**.
 Linseed oil and cakes of linseed.
- 23 **GUISSO, MICHAEL, Nuoro**—Proprietor.
 Specimens of pure wax and white wax candles.
 Specimens of honey, sweet and bitter.
- 24 **BRAVO, MICHAEL, Pignerol**—Proprietor.
 Specimens of raw silks, the product of the silk-worms of the valleys of Pignerol and Brianza.
 Specimens of organzine, strong and medium dressing (apprêt) with thrown silk, for the manufacture of silk plush, from the same valleys.
- 25 **SINIGAGLIA BROTHERS, Busea**—Proprietors.
 Specimens of raw and thrown silk.
- 26 **JACQUET, HENRY, & Co., Latour, Luzerne**—Proprietors.
 Specimens of raw and thrown silk.
- 27 **CASSISA, FRANCIS, & SONS, Novi**—Proprietors.
 Specimens of raw white silk, of different numbers.
- 28 **VERTU BROTHERS, Turin**—Manufacturers.
 Specimens of white thrown silk, or *strafillato*.
- 29 **GALIMBERTI, CONSTANTINE, Pella, Novara**—Proprietor.
 Specimens of raw silk.
- 30 **RIGNON, F., & Co., Savigliano, Saluzzo**—Proprietors.
 Specimens of raw and thrown silk for manufacturing silk plush and velvet.
- 31 **MESINA, SALVATORE, Nuoro**—Proprietor.
 Black woollen yarn; black raw wool, the production of Nuoro sheep, suitable for manufacturing impermeable stuffs; coarse black woollen cloth (called by the Sardinians *arbaccio*), and grey cloth. Olive oil made in 1850.
 [The wool in this instance is of an inferior quality, but its colour is that of the natural fleece.]
- 32 **ROCCA, JOSEPH, Turin**—Manufacturer.
 Two violins, constructed after the models of Guarnerius and Stradivarius.
 [There were three violin-makers named Guarnerius, who flourished circ. 1700; the best was Joseph. Stradivarius was a pupil of Andreas Guarnerius. Their instruments are considered the finest, and vary in value from 100*l.* to 300*l.*—H. E. D.]
- 33 **BENOIT, ANTHONY, Cluses (Savoie, Faucigny)**—Manufacturer.
 Machines for making watch balances; cylindrical escapements; lever escapements; new machine for cutting wheels for escapements.
 Specimens of watchwork; repeating and seconds watches, chronometers, &c.; specimens made by the pupils of the clock-making school at Cluses.
 New rotary high-pressure steam-engine.
 Measuring apparatus to be used on railroads. Its object is to indicate various circumstances incidental to the passage of the train, and particularly its exact velocity.
- 34 **ANNEY & PONT**—Manufacturers.
 Calicoes of different colours and widths; handkerchiefs of Indian style; large size; saracen percalina.
- 35 **REY BROTHERS, Turin**—Manufacturers.
 Woollen worked cloth for carpets.
- 36 **The DIVISIONAL COMMITTEE of Nuoro**.
 Coarse woollen cloth (*arbaccio*), red coloured, for petticoats, spencers, &c.; the same for stockings and breeches; black, of inferior quality, for bornuses and capotes.
 [This cloth is obtained from the wool of an inferior breed of sheep—the Nuoro sheep. The garments are warm, but coarse and strong.]
- 37 **FERMENTO, LEWIS, La Rocca, Mantua**—Proprietor.
 Specimen of thrown silk (*strafilla*)
- 38 **IMPERATORI, JOSEPH HENRI, Pallanza**—Proprietor.
 Specimen of organzine ^{no. 11}

- 39 CHICHIZOLA, JAMES, & Co., *Turin and Genoa*—Manufacturers.
Assortment of plain and fashioned coloured velvets. Specimens of figured satins; silk-gros; gros de Paris; glazed silk-gros; and flowered damask.
- 40 SOLEY, BERNARD, *Turin*—Manufacturer.
Specimens of silk of different colours and designs; white and coloured transparent taffetas.
- 41 GUILLOT, JOSEPH, & Co., *Turin and Genoa*—Manufacturers.
Silk plush for hats; piece of velvet, lace embroidery; specimen of velvet for tapestry; a set of *foulards* for robes.
- 42 GUILLOT, JOSEPH, & Co., *Genoa*.
Silk velvets—black, *pensée*, blue, crimson, bears' ear, Raymond blue, spring-green, ruby, emerald-green, puce, blue Hayti, and *mode*.
- 43 MOLINARI, AUSTIN, *Genoa*.
Black silk-velvet pieces, of finest quality, in the antique style; silk velvet for furniture and hangings; silk damask; satin stuff, and patterns of several stuffs, for furniture.
- 44 DEFFERRARI BROTHERS, *Genoa*.
Fourteen patterns of silk stuffs and velvets.
- 45 BORZONE, JOHN, *Chiavari*.
Two linen towels, commonly called *macramè*.
- 46 DURIO BROTHERS, *Turin*.
Two pieces of leather for soles; one piece for thongs; from Piedmontese and American ox-hides.
- 47 FARINA AUGUSTIN, *Turin*.
Punches for microscopical typographic characters; a set of punches for different Roman, English, and German types; a sheet with their impressions.
- 48 BAYNO, JOSEPH, *Turin*.
Specimens of different qualities of lace.
- 49 TESSADA, FRANCIS, *Genoa*.
Embroidered cambrie handkerchiefs in the frames; ladies' black lace mantles; patterns of lace.
- CROCCO BROTHERS, *Genoa*.
Embroidered cambrie handkerchiefs; frame containing subjects for embroidery; woollen waistcoats.
- 51 FORNO, JOHN, *Turin*.
A complete dress for a *soirée*; a groom's dress.
- 52 GULLIA, JOHN BAPTISTE, *Turin*.
A pair of boots, called *à la Chaudron*, for postillions; a pair made of prepared leather, the hair not having been removed; a pair in calf's leather, without seam; a pair in silk, wadded.
- 53 MANTAUT, LEWIS, *Turin*—Engraver.
Specimen of an engraved copper plate for bill-heads, &c., inoxidable.
[By the latter expression the exhibitor intends to state that the surface of the metal is not affected by the oxygen of the air. But other gases in the air, and particularly a minute quantity of sulphuretted hydrogen, which is always present in the air of towns, exerts a much more powerful effect upon polished metallic surfaces than pure oxygen gas.—R. E.]
- 54 ROPOLO, PETER, *Turin*.
A small gaufre-iron door, mounted on mechanical pivots.
- 55 GRANZINI, JAMES, *Turin*.
Iron bed with elastic mattresses, enclosed in a buffet. Pattern in wood of a "*bomb à diaphragme*," containing small grenades separated from the gunpowder, and intended to burst after the explosion.
- 56 BARBIE, JOSEPH, *Turin*.
A strong lock for coffers, with cut-out mounting, and a key of only one piece.
- 57 MONTEFIORI, CHARLES, *Turin*.
A small silver plate with the portrait of Her Majesty Maria Adelaide, Queen of Sardinia, adorned with chased figures in relief.
Bronze medal, cast in the mould of the portrait of His Majesty Victor Emmanuel II., King of Sardinia, chased on a silver plate by the exhibitor.
- 58 LOLEO, JAMES, *Genoa*.
Several works in silver filigree, among which a monumental column ornamented with emblems, intended to celebrate the era of the Great Exhibition of 1851.
- 59 BENNATI, JOSEPH, *Genoa*.
Figure, with a pedestal, representing Christopher Columbus, in silver filigree.
- 60 LENDY, NICOLAS, *Turin*.
Three microscopic dies for stamping *Dorini*, a kind of minute gold ornament of extreme thinness worn by the peasant-women in Piedmont.
- 61 BERTINETTI, PETER, *Turin*.
A carriage, with double veneering in wood, mouldings and figures in marqueterie.
A box for a flute, in solid veneering.
Specimen of cylindrical veneering.
- 62 MARTINOTTI, JOHN, *Turin*.
A dressing table, in rosewood.
- 63 MARTINOTTI, JOSEPH, *Turin*.
Large wood frame, carved and gilt, for a looking glass or picture.
- 64 CAPELLO, GABRIEL, *Turin*.
Cornice in pear-wood, carved and ornamented with leaves, flowers, animals, &c. A table, a curule chair, and a pedestal inlaid with various foreign woods, after the Etruscan school; the property of H.M. the King of Sardinia.
Mahogany round table on a triangular stem, with carved figures and masks; the upper part made of white wood, covered with velvet and fringed. The property of His Royal Highness the Duke of Genoa.
Round table in white wood, with a triangular stem carved and gilt; the upper part garnished with crimson velvet and fringed.
A cabinet floor, inlaid with various foreign and indigenous woods, after the Etruscan school.
- 65 GRIVA, MORICE, *Turin*.
A rosewood article of furniture, carved and gilt, applicable as a desk, a toilet, and a work-table for ladies.
- 66 PERELLI, ANDREW, *Turin*.
A table-sofa, in rosewood and mahogany, carved and ornamented with Chinese marqueterie.
- 67 CUGLIERERO, RAYMOND, *Turin*.
Two light chairs on wheels, made with indigenous woods.
- 68 CIAUDO, JOSEPH, *Nice*.
An oblong drawing-room table in olive-wood, with mosaic surface, representing historical events, inlaid with indigenous woods of the natural colour, forming imitation of oil paintings. This table is supported by a pierced column, ornamented with lions, garlands, and arabesques.

- 69 **BISSO BROTHERS, Genoa.**
Round table, inlaid with fine stones and medallions, representing the chariot of the sun, the four seasons, and the signs of the zodiac.
- 70 **MAGNI, FRANCIS, Genoa.**
Round table, with inlaid drawers, representing the signs of the zodiac, and a central medallion representing a Neapolitan improvisatore; the stand in the form of columns with dolphins and arabesque lion claws. Made of natural woods and ivory.
- 71 **SPEICH, PETER, Genoa.**
Ebony table, in the *renaissance* style. A *Prie-dieu* stool of Indian walnut-tree, in a similar style.
- 72 **DESCALZI, JACQUES, Chiavari.**
Round table, inlaid with wood in imitation of marble. Round table, inlaid with small bands of wood of various colours, imitating the tissue called gingham, with frame made of small pieces of wood imitating marble. Light Chiavari chairs of various forms and colours.
Looking-glass, defended with a preparation to protect the glass from humidity and contact with the air.
- 73 **DA FIENO, JOHN BAPTISTE, & MONTECUCCO, ANDREW, Genoa.**
Console table, carved and gilt, with a marble slab.
- 74 **CANEPA, JOHN BAPTISTE, Chiavari.**
Chairs of white wood; others, coloured yellow. Gothic chairs, of black and white wood.
- 75 **BOURGOIN, BERTHEA, Turin—Manufacturer.**
Specimen of blacking.
- 76 **CASTAGNETO, EMANUEL, Genoa—Manufacturer.**
White cream of tartar.
[Cream of tartar in the crude state is called argol, and is of a reddish colour. The colouring matter is removed by washing, and by recrystallization white cream of tartar is procured. Chemically it is a monobasic tartrate of potash.—R. E.]
- 77 **FINO, JOHN, Turin.**
A set of different specimens of brushes.
- 78 **MONTU, JOSEPH, and Co., Turin.**
Specimens of Piedmontese heath sprigs, for the manufacture of brushes; heath brushes for various purposes.
- 79 **BAFICO, JOHN LUC FRANCIS, Genoa.**
Wooden vases, painted in imitation of Japan wares.
- 80 **STRAUSS, JACOB, Turin.**
A set of tobacco-pipes and *porte-cigares* in white talc, carved and ornamented.
- 81 **VALDETTARO, JEROME, Genoa.**
Fifty qualities of fine and superfine pastes, or *vermicellis*; fifty small boxes of sorted vermicellis.
- 82 **ROMANENGO, GEORGE, Genoa.**
Boxes, containing candied fruits.
- 83 **COMBA, FRANCIS, Turin.**
An elk (*Cervus alces*) prepared according to a new method, by substituting for the usual stuffing a cast, moulded in paper upon the body or upon a model of the animal.—Belonging to the Zoological Museum of Turin.
- 84 **ACQUARONE, JOHN BAPTISTE, Porto Maurizio.**
Liquid citric acid, extracted from the juice of lemons: a new production.
- 85 **BOSIO, ANTHONY, Turin.**
The arms of the Royal House of Savoy ornamented with trophies carved in wood.
- 86 **STEFANI, WILLIAM, Turin—Proprietor.**
Two large silk embroidery tableaux, the last work of Bussoni Bernard of Venice.
- 87 **CAVIGIOLI, CHARLES, Turin.**
Bronze medals cast with a tenth proportion of pewter. By the process adopted by the exhibitor the metal is said to come out of the mould in such a state that two strokes of the die are only wanting to stamp them completely. Specimens of iron castings.
- 88 **SPANNA, JOSEPH, & Co., Turin—Manufacturers.**
Specimens of artificial marble, prepared with granite and wood.
- 89 **CHIRIO & MINA, Turin.**
A large volume, containing the history of Hautecombe Abbey, ornamented with coloured borders and a number of engravings.
- 90 **RONDELLI, FELIX, Nice.**
An obelisk covered with shells and other articles found on the sea-shore, presented as symbolical of Commerce.
- 91 **SCOTTO, The Chevalier, Genoa.**
Steel engraving.
- 92 **FRUMENTO, J. B., Genoa.**
Marble statue, representing a Bacchante.
- 93 **BARBIERI, DE, Genoa.**
Superfine paste of vermicelli.
- 94 **GUELFI, —, Genoa.**
Superfine paste of vermicelli.
- 95 **GANDOLFI, —, Turin.**
A military dress.
- 96 **DOMENGET, —, Savoy.**
Specimens of mineral waters.
- 97 **MASERA, —, Turin.**
A collection of surgical instruments.





NORTH ARRAS, G. TO J. 45; NORTH EAST CENTRAL GALLERY, I. 45, 46.

Royal Commissioner in London, LE CHEVALIER RIBEIRO DE SA, 22 Duke Street, Portland Place. Agent, F. J. VANZETLER, Esq., 5 Jeffreys Square.

THE collection sent by Portuguese exhibitors is extremely rich in raw materials and produce, and considerable efforts appear to have been made to represent as far as possible the natural resources of a country, the manufacturing capabilities of which remain still to be developed. Some excellent specimens of limonite, a hydrous oxide of iron, much used as a source of that valuable metal, have been sent from Lisbon and from other places. Samples of copper, lead, and antimonial ores are also exhibited. Interest attaches likewise to the lignites, anthracite, and coal exhibited, which indicate available sources of mineral fuel to this country. Chemical manufactures appear to have been more extensively represented than some others. The specimens exhibited are principally those of substances employed in the useful arts, as in glass-making, dyeing, &c. It would be interesting to learn whether among these the strontian is obtained in Portugal. Various kinds of porcelain and fire-clays are also shown. Lithographic stones from various localities, show a new source of this valued substance. A highly interesting and valuable collection is that of the marbles from the Museum of the Royal Academy of Lisbon, and from a mineralogical exploration made by order of Government, and private parties; and it appears to indicate in the strongest manner the vast natural resources of Portugal for these ornamental stones. Some of the specimens shown have great beauty and singularity of veining. A good collection of agricultural products represents the fertility of the soil of this country: wheat of various kinds, maize, haricots, rye, all show the productiveness of the land even under indifferent agricultural management. The dried and preserved fruits, and a number of other vegetable and animal products, deserve attention. The textile manufactures are tolerably represented in cotton, linen, silk, and wool. As a vast specimen of the art of the potter, the great wine, or oil-jar from Alemtejo will receive notice. The vast capacity of similar jars not unfrequently met with in Spain and Portugal is a subject of familiar knowledge. Some works in the precious metals are considered interesting. Some fine carvings in ivory, are indicative of much skill in the execution of such objects. Among vegetable products, attention will be drawn to specimens of tobacco in various states of manufacture, exhibited by the Royal Tobacco Contractors of Lisbon. Various miscellaneous articles also add value and interest to the articles sent by this country.—R. E.

BONNET, CARLOS, *Lisbon*—Producer.

1 Limonite. Hydrous oxide of iron.

[This mineral exists in great abundance in the province of Alemtejo, district of Beja, parish of Aljustrel, place Algares. Vestiges of its having been formerly explored are discovered, but at what period is not exactly known.]

2 Limonite.

[This mineral exists in the province of Estremadura, district of Lisbon, parish of Santiago de Cacem, place Outeiro das Sete Tijelas.]

3 Limonite (pisolitic).

[This mineral is found in great abundance in the province of Estremadura, district of Lisbon, place Algares.

Vestiges of exploring operations, which have taken place at different periods, are found, the last appearing to have been in 1620.

The hydrous oxide of iron is presented in nature in various ways, and is known to mineralogists by various names. Of these the limonite of Beudant is an earthy mineral, of brown or yellow colour, containing 80 per cent. of peroxide of iron, and therefore 55 per cent. of iron. It occurs entirely in sedimentary rocks, where it often forms thick masses, belonging to all geological periods, including the most modern. It is much worked in France, and makes excellent iron. It is often oolitic and granular, and sometimes pisolitic, occasionally passing into ochre.—D. T. A.]

4 Magnetic iron ore.
[This mineral is found in the province of Alemtejo, district of Beja, parish of St. Amador, place da Crujeira. It is found in the remains of former works, and sometimes it is mixed with small portions of carbonate of copper.]

5 Impure carbonate of iron.
[This mineral exists in the province of Alemtejo, district of Beja, parish of St. Amador, place da Crujeira. It is found in the remains of former works, and sometimes it is mixed with small portions of carbonate of copper.]

6, 7 Limonite.
8 Yellow ochre.
These three minerals are found in various parts of the province of Minho, district of Vianna.

[Yellow ochre is an earthy variety of limonite, mixed with argillaceous earth, and often with hydrate of alumina. It is much used as a colouring matter, and when calcined becomes *red ochre*. The limonite is described above.—D. T. A.]

BASTOS, JOSE FERREIRA PINTO—Proprietor.
9 Copper ore.
This mineral which has not yet been analyzed, is found in the province of Beira, district of Aveiro, place Mina de Palhal.

10 Copper pyrites. Sulphuret of iron and copper.
Found in the province of Alemtejo, district of Beja, parish of Aljustrel, place S. Joao do Deserto. Various mines are now in full operation.

BONNET, CARLOS, *Lisbon*—Producer.
11 Copper pyrites, with native copper.
Found in the remains of former exploring operations, in the province of Alemtejo, district of Beja, parish of Villa Nova da Baronia.

12 Galena.
Met with in various parts of the province of Minho, district of Vianna.

NAZARETH, ANTONIO JOSE DUARTE, *Lisbon*—Producer.
13 Galena.
Found in the province da Beira, district de Coimbra, parish d'Arganil Serra da Aveleira.

PERSEVERANÇA COMPANY, *Oporto*—Proprietor.
14 Sulphuret of antimony.
[Found in abundance in the province do Minho, district do Porto, parish of Vallongo. This mine was explored a few years ago, and portions of the production sent to England. The workings, for the present, are suspended.]

15 Sulphuret of lead and antimony.
Found in the province of Minho, district of Vianna.

16 Cassiterite.
From the province of Minho, district of Oporto, parish of Rebordoso. This mineral is met with scattered in the remains of inundations, and on the rocks amongst decomposed pegmatite. The works are at present suspended.

[The mineral called by Beudant *Cassiterite* is the common tin-stone of mines, and is an oxide of tin, containing, when pure, $77\frac{1}{2}$ per cent. of metal. The impurities are oxide of iron, silica, and titanium.]

THE COAL-MINING COMPANY OF OPORTO, *Lisbon*—Producers.

17 Anthracite.
Extracted from a mine situated in the province of Minho, district of Oporto, parish of S. Pedro de Cova. The production is abundant, and it is used for domestic purposes, chiefly in Oporto and Lisbon. The mine, which

belongs to the State, has been explored for many years, and occasionally it is offered, for a term, by public auction.

ROQUE, JOSE JOAQUIM, *Delgado*—Producer.
18 Lignite.
Found in abundance in the province of Estremadura, district of Lisbon, parish of Lourinha, and generally met with in the remains of eruptions, on the mountains adjoining the ocean. It also exists in many other parts of the surrounding districts.

LACERDA, RAYMUNDO VERISSIMO DE SOUZA—Producer.
19 Coal.
Found in the province of Estremadura, district of Santarem, parish of Valle Verde.

GOULARD, —, Producer.
20 Lignite.
Found in the province of Estremadura, district of Leiria, parish of S. Pedro de Muelo.

[Too little is known of the geology of Portugal to justify any conclusions concerning these lignites. The extent of the deposit is not stated, nor have we any evidence as to the facilities for working mines, should valuable mineral property exist. It is well, however, to direct attention to the subject by the exhibition of these specimens.—D. T. A.]

21 Graphite.
Found in the province of Minho, district of Vianna.

BONNET, CARLOS, *Lisbon*—Producer.
22 Graphite.
Found in the province of Alemtejo, district of Portalegre, parish of St. Salvador, place dos Almagreiros. It exists in abundance; but as yet no use has been made of it.

SUBSERRA, MARQUIS DE—Producer.
23 Asphalt.
Found in abundance in the province of Estremadura, district of Leiria, parish of Alcobaca.
24 Bituminous sand.
This sand forms a portion of the preceding mine, and is used in conjunction with asphalt.

GOULARD, —, Producer.
25 Asphalt.
Found in the province of Estremadura, district of Leiria, parish of St. Pedro de Muelo. It forms a layer of about 60 feet in thickness, and is situated on the edge of the ocean. The mine is now being explored.
26 Sample of the asphalt, worked.

[The asphaltes here exhibited remind the geologist of the beds of bituminous sand used for economic purposes in France and Spain. The material is very valuable, if properly used, in the manufacture of pavements, and for many other purposes.—D. T. A.]

27 Mineral coal.
Found in the province of Estremadura, district of Santarem, parish of Valle Verde.

HIESCH, J. M. & BROTHERS, *Lisbon*—Manufacturers.
28 Muriatic acid.
This article is extensively manufactured by the exhibitors, near Verdelha, in the province of Estremadura, and it is obtained by the reaction of salt and sulphuric acid. The materials are native products.

29 Sulphuric acid.
This acid is obtained in beds of lead, by the combustion of brimstone with nitrate of soda. The original material are of foreign production, but occasionally brimstone imported from the Portuguese possessions.

- 30 Nitric acid.
Obtained from nitrate of soda and sulphuric acid.
LEAL, FRANCISCO MENDES CARDOSO, *Lisbon*—
Manufacturer.
- 31 Carbonate of potash.
Obtained by the combustion of argol. The original
material is very abundant in Portugal.
- 32 Cream of tartar.
Obtained from raw tartar or argol.
- FERREIRA, AGOSTINHO JOAQUIM, *Porto Brandao, near
Lisbon*—Producer.
- 33 Pure cream of tartar.
34 Cream of tartar, second quality.
35 Red tartar.
36 White tartar.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 37 Cream of tartar, second quality.
38 Pure cream of tartar.
- GARLAND, LAIDLEY, & Co., *Lisbon*—Manufacturers.
- 39 Cream of tartar, in powder.
40 Grey cream of tartar, second quality.
41 Grey cream of tartar, first quality.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 42 Nitrate of potash.
- CORREA, BARON DE SAMORA—Producer.
- 43 Refined sea salt.
Extracted from the waters of the Tagus, at the *Marinha
Nova, near Lisbon*.
- 44 Refined sea salt, in lumps.
- PROPRIETORS OF THE SALT WORKS, *St. Ubes*—
Manufacturers.
- 45 Sea salt, in lumps.
46 Sea salt, in crystals.
47 Common salt.
- CORREA, BARON DE SAMORA—Producer.
- 48 Sea salt, in crystals.
49 Common salt, in lumps.
This salt is derived from springs in the province of
Estremadura, district of Santarem, division of Rio Maior,
under which denomination it is known, and it is consid-
ered of superior quality.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 50 Sulphate of soda.
Prepared from sulphuric acid and carbonate of soda,
both native products.
- 51 Carbonate of soda.
Extracted from native soda.
- HIRSCH, J. M. & BROTHERS, *Lisbon*—Manufacturers.
- 52 Carbonate of soda.
Extracted from artificial soda.
- 53 Artificial soda.
Extracted from native productions.
- MACHADO, FRANCISCO ANTONIO—Producer.
- 54 Limestone.
From the province of Estremadura, district of San-
tarem.
- 55 Grey lime, from the same district.
56, 57 Grey lime.
From the province of Minho, district of Vianna.
- BONNET, CARLOS, *Lisbon*—Producer.
- 58 Siliceous carbonated lime.
From the province of Estremadura, parish of Grandola,
near Fontainhas. This calcareous stone furnishes
slightly hydraulic lime.
- 59 Sulphate of lime.
From the province of Estremadura, parish of Cezim.
- 60 Sulphates of barytes.
From the province of Alemtejo, and parish of Ce
Evidences of its having been previously explored are
casually discovered.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 61 Nitrate of barytes.
Used in pyrotechny.
- 62 Nitrate of strontia. Similarly used.
- 63 Sulphate of natural iron.
From Vianna do Minho.
- HIRSCH, J. M. & BROTHERS, *Lisbon*—Manufacturers
- 64 Artificial sulphate of iron (green vitriol).
Extracted from iron and sulphuric acid, and used
dyeing.
- LEAL, FRANCISCO MENDES CARDOSO, *Lisbon*—
Manufacturer.
- 65 Sulphate of iron (green vitriol).
Extracted from pyrites of natural iron, and used
printing and dyeing.
- 66 Sulphate of copper (blue vitriol).
Extracted from sulphuric acid on copper, and used
dyeing.
- 67 Ammoniacal sulphate of copper.
Used in pyrotechny.
- HIRSCH, J. M., & BROTHERS, *Lisbon*—Manufacturers
- 68 Sulphate of copper (blue vitriol).
69 Sulphate of zinc (white vitriol).
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 70 Chloride of tin (salt of tin).
Used in dyeing.
- NARZIVELLA, MARIA, *Lisbon*—Manufacturer.
- 71 White lead. Carbonate of lead.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 72 Nitrate of lead.
Used in connexion with printing.
- LEAL, FRANCISCO MENDES CARDOSO, *Lisbon*—
Manufacturers.
- 73 Chromate of lead.
74 Iodide of potassium.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 75 Acetate of potash.
76 Tartrate of potash and soda (Rochelle salt).
- HIRSCH, J. M., & BROTHERS, *Lisbon*—Manufacturers
- 77 Chloride of lime.
- LEAL, FRANCISCO MENDES CARDOSO, *Lisbon*—
Manufacturer.
- 78 Red oxide of mercury.
Used in medicine by veterinary surgeons.
- 79 Corrosive sublimate.
- SERZEDELLO & Co., *Margueira, near Lisbon*—
Manufacturers.
- 80 Bisulphuret of mercury.
81 Tartar of potash and antimony (tartar emetic).
- 82 Quartz latio.
Found in Abrantes, and used in the manufacture
glass.

- 83 Kaolin.
From the province of Beira, district of Aveiro, and used in the manufacture of porcelain.
- 84 Felspar Kaolin, from Porto Rio Tinto.
- 85 Orthose Kaolin, from Porto Rio Tinto.
- 86 Kaolin, from Porto Rio Tinto.
- 87 White refractory clay, from the province of Beira, Rio Vouga.
- 88 Black refractory clay, from the same district.

BONNET, CARLOS, *Lisbon*—Producer.

- 89 Feldspar (orthose), from the province of Alemtejo, district of Portalegre, parish of Gafete, at Poço da Lança.
- 90 Red clay, from the province of Alemtejo, district of Evora, council of Estremoz.

It is of this clay that the much-approved earthenware is made, called "Estremoz china."

- 91 Granite, found in Sines.
- 92 Granite, from the province of Alemtejo, district of Evora, parish of Corval.
- 93 Syenite, from the province of Alemtejo, district of Beja, parish of Beringel.
This rock is susceptible of a fine polish.
- 94 Syenitic granite, from the province of Alemtejo, district of Evora, division of Arraiolos.
- 95 Syenitic granite, from the province of Alemtejo, district of Beja, council and parish of Serpa, at Pedra Langa.
This stone will bear a fine polish.
- 96 Syenitic granite, from the province of Alemtejo, district of Evora, division of Monte Mor o Novo.
- 97 Syenite, from the province of Alemtejo, district of Evora.

- 98 Diorite, from the province of Alemtejo, district of Portalegre, parish d'Arronches.

99 Hyalomite passing into mica-schist, and containing amphibole (?) from the parish of Alemtejo, district of Evora, parish of Safira.

- 100 Granitic syenite, from the province of Alemtejo, district of Portalegre, parish of Alter Pedroso.

This stone, when polished, has a fine effect.

- 101 Granitic syenite, from the province of Alemtejo, district of Beja, parish of Tourao.

102 Pegmatite passing into protogine, from the province of Alemtejo, district of Portalegre, within the city.

The greater part of the houses are built with this stone.

[This and other collections of material capable of being used in construction and decoration, cannot fail to have great interest, and will induce useful comparisons, on the one hand, as to the relative abundance and variety of certain useful kinds in different countries, and, on the other, as to the real use that is made of such sources of wealth. Many of the stones, especially the porphyries, said to bear a high polish, are certainly very difficult to work, but are still of great use for many purposes. Pegmatite, the last-mentioned rock, is a granite in which the component minerals form very distinct masses closely compacted. Protogine is a granite, of which the mica contains magnesia. It is chiefly and abundantly found in the Alps.—D. T. A.]

- 103—105 Granite, from the province of Minto, district of Vianna.

106 Quartzose conglomerate, from the province of Estremadura, district of Lisbon, parish of Melides.

This stone is used to make millstones.

BONNET, CARLOS, *Lisbon*—Producer.

- 107 Calcareo-argillaceous sandstone, from the province of Alemtejo, district of Beja, parish of St. Victoria.
Used in the construction of millstones.

108 Sedimentary limestone, from the province of Alemtejo, district of Beja, parish of Moura.

Used in the construction of millstones.

- 109 Limestone with serpentine, from the province of Alemtejo, district of Vianna.

This stone will take a beautiful polish.

DEJANTE, —, *Lisbon*, Producer.

- 110 Lithographic stone, from Serra D'Arrabida.
- 111 Lithographic stone, from the province of Estremadura, near Cezimbra.

THE TOBACCO CONTRACTORS—Producers.

- 112, 113 Lithographic stones, from Serra D'Arrabida.

THE DUKE DE PALMELLA—Producer.

- 114 Lithographic stones, from Calhariz.

DEJANTE, —, *Lisbon*—Producer.

- 115 Lithographic stones, from Cezimbra.

[For lithographic purposes, a stone is required having a perfectly smooth and fine-grained face decidedly absorbent. The best and largest of such stones are obtained from the northern part of Bavaria, but many other sources are now known. These from Lisbon had not, however, been known.—D. T. A.]

THE INSPECTORS OF PUBLIC WORKS—Producers.

- 116, 117 Hydraulic clays, from the Azores.
- 118 Hydraulic volcanic scoriae.
These three productions, mixed with lime, make an hydraulic bitumen, called Argamassa cement.

BONNET, CARLOS, *Lisbon*—Producer.

- 119 Serpentine, from the province of Alemtejo, district of Beja, parish of Castro Verde.

120 A metamorphic rock apparently eurite, from the province of Alemtejo, district of Beja, division of Castro Verde.

Takes a magnificent polish.

121 Limestone crystalline (in France called red-veined marble), from the province of Alemtejo, district of Beja, parish of St. Iria, at Outeiro das Cruzes.

122 Violet marble, from the province of Alemtejo, district of Evora, parish of Estremoz.

123 White marble, from the province of Alemtejo, district of Evora, parish of St. Thiago de Rio de Moinhos.

124 Porphyry, from the province of Alemtejo, district of Evora, council of Vianna.

125 Rose marble, from the province of Estremadura, district of Lisbon, council of Santiago de Cacem.

126 Calcareous breccia, from the province of Alemtejo, district of Portalegre, council of Ponte de Sor.

127 Serpentine with limestone, from the province of Alemtejo, district of Evora, council of Vianna.

128 Rose marble, with green veins, from the province of Alemtejo, district of Portalegre, division of Campo Maior.

129 Rose and white marble, from the province of Alemtejo, district of Beja, Serra de Ficalho.

130 Rose and white marble, with stripes, from the same district.

131 Red marble, with white veins, from the province of Alemtejo, parish of St. Iria Outeiro das Cruzes.

132 Green and white porphyry, from the province of Alemtejo, parish of Castro Verde.

133 Rose marble, with green veins, from the province of Alemtejo, council of Campo Maior.

DEJANTE, —, *Lisbon*—Producer.

134 Brocatella marble, from the province of Alemtejo.

135 Violet marble, with black veins, from the province of Alemtejo, council of Estremoz.

MUSEUM OF THE ROYAL ACADEMY OF SCIENCES, *Lisbon*.

A varied assortment of marbles, including the following:—

136 From Vialonga, at Malto do Conde.

- 137 From Serra de Monsanto, at Oliveira das Mesquitas.
 138 From Oeiras, at Fonte da Carpolina.
 139 From Ribeira d'Alcantara, adjoining dos Arcos das Aguas Livres.
 140 From the parish of St. Domingos de Rana at Xerinhos.
 141 From Linho, adjoining á Ribeira de Barcarena.
 142 From the parish of St. Amaro, adjoining Oeiras.
 143 From Rio Secco, adjoining Tapada d'Alcantara.
 144 From the parish of Rana.
 145 Specimen of a blue colour, from Cintra.
 146 From Pimenteira, adjoining Fonte de Calcero.
 147 From within Tapada d'Ajuda, above da Fonte.
 148 From the parish of St. Domingos de Rana, adjoining to Matto Largo.
 149 From Penhalonga in Cintra.
 150 From Pimenteira, adjoining Fonte de Calcero.
 151 From Rio Secco, parish of Ajuda.
 152 From Serra de Monsanto, Oliveira das Mesquitas.
 153 From Oeiras, at Alberjas.
 154 From Pedreira d'Alcolena, at Belem.
 155 From Rio Secco, parish of Ajuda.
 156 From Serra de Monsanto, Oliveiras.
 157 From Oeiras, Calcada do Torneiro.
 158 From Pedreira d'Alcolena, at Belem.
 159 From Termo d'Alverca, adjoining Alhandra.
 160, 161 From Vialonga, near Massasserec.
 162 From Vialonga, near the Duke's Quarry.
 163 From Vialonga, near Casal dos Bertho los.
 164 From Vialonga, near Arrotes do Espregal.
 165 From Vialonga, near Almargem.
 166 From Vialonga, near Flamenga.
 167 From Vialonga, near Penedos dos Negros, parish of Almargem.
 168 Specimens, various.
 169 From Vialonga, at Fonte do Valle.
 170, 171 Miscellaneous specimens, from Vialonga, at Penedos da Olella, parish of Almargem.
 172, 173 From Vialonga, River Francao.
 174 From Vialonga, Abobereiro.
 175 From Vialonga, Cavalleiros.
 176, 177 Miscellaneous specimens, from Vialonga, Val do Monte.
 178—180 From Vialonga, St. Cruz.
 181—183 From Vialonga, Fonte Sancta.
 184 From the parish of Bellas, Monte Abrao.
 185, 186 From the parish of Bellas, Barouto.
 187 From the town adjoining Penella.
 188 From the parish of Bellas, Carniceiro.
 189 From Villa fria.
 190 From Barrocal, adjoining Tavira.
 191 From Tavira, province of Algarve.
 192 From Sazes de Lorrvaio.
 193 From the parish of Bellas, Cambra.
 194, 195 From Villa da Ega.
 196 From Salemas.
 197, 198 From Caenga.
 199 From Villa da Ega.
 200 From Barrocal, St. Margarida, near Tavira.
 201 From Barrocal Serro do Cavaco, near Tavira.
 202 From near Forte das Maias.
 203 From Pero Pinheiro, Mafra.
 204 From Regueira de Pedrozo, near Aldea do Meio.
 205 From Torre da Aguilha, near Casal.
 206 From the parish of Tires Cova da Onca, near Acougue.
 207 From near Abroil.
 208 From Vialonga, near Matto de Domingos Mattheus.
 209, 210 Miscellaneous specimens, from Vialonga, near Galvoes.
 211 From Vialonga, near Galvoes.
 212 From Vialonga, Eira de Poina.
 213, 214 Miscellaneous specimens, from Vialonga, near Arrotes Casal das Pilotas.
 215, 216 Specimens, various, from Vialonga, near Santa Cruz, Pedreira do Mouco.

- 217, 218 From Vialonga, near Borda do Matto.
 219 From Vialonga, near Matto de Domingos Mattheus.
 220 From Vialonga, near Cascalheiras do Espregal.
 221, 222 From Vialonga, near Tapada do Conde.
 223 From Vialonga, near Rio de Troia.
 224, 225 Miscellaneous specimens, from Vialonga, at Casal do Sapinho.
 226 From Vialonga, at Carrapito de cima.
 227 From Vialonga, at Rigango.
 228 From Vialonga, at Calhandriz.
 229—231 Miscellaneous specimens, from Vialonga, at Cascalheiras do Espregal.

[It is evident, from the magnitude and beauty of this collection, that Portugal is remarkably rich in marbles, of which many are of singular beauty. No doubt a large proportion are subject to veins and flaws, and can be obtained in large blocks or slabs of considerable magnitude, but of the rest there is, no doubt, ample variety.—D. T. A.]

DEJANTE, —, *Boa Vista, Lisbon*—Producer.

- 232 Breccia, from Serra d'Arrabida.
 233—244 Miscellaneous specimens of marble.
 245 Breccia, from Serra d'Arrabida.
 246, 247 Various specimens of marble.

FIGUEIRO, JOAQUIM DE—Producer.

- 248, 249 Marble, from Vianna da Alemtejo.

DEJANTE, —, *Lisbon*—Producer.

- 250, 251 Specimens of marble.

FIGUEIRO, JOAQUIM DE—Producer.

- 252—257 Specimens of marble.

BONNET, CARLOS, *Lisbon*—Producer.

258 Marble mosaic, composed of sixty specimens, and various ornamental stones, all of the province of Alemtejo. Executed in the manufactory of Dejanete, Lisbon.

[The inlaying in marble, shown in this specimen, is probably intended to illustrate the variety of the marbles of one locality rather than the condition of the art of mosaic in Lisbon.

In this light it deserves attention. The workmanship does not pretend to go beyond the geometrical forms usual in the infancy of the art of mosaic.—D. T. A.]

- 259 White marble, from the province of Alemtejo.
 260 Marble, from the province of Alemtejo, district of Beja, Serra de Ficalho.
 261 Specimens of marble.
 262 Green breccia, from the province of Alemtejo, district of Evora, at Roncao.

DEJANTE, —, *Lisbon*—Producer.

- 263, 264 Slabs of white marble, with black veins; appearing similar to glass.

BONNET, CARLOS, *Lisbon*—Producer.

265 Slab of rose-coloured marble, with veins; prepared as glass, in the manufactory of Dejanete, Lisbon; appearing very transparent.

DEJANTE, —, *Lisbon*—Producer.

- 266 Black marble, from Cintra.
 267 Red marble, showing white shells.

- 268 Black and white marble, from the province of Alemtejo, district of Evora, council of Estremos.
 269 Yellow and white marble.
 270 White marble, of delicate rose colour, from the province of Alemtejo, district of Evora, council of Estremos.
 271, 272 White and black marble.
 273 Dark-blue marble.

274 Slate-stone, from the province of Alemtejo, district of Evora, council of Estremos.

275, 276 Fire-bricks, from the manufactory of Oporto, at Bulhao.

277 Fire-bricks, from the manufactory at Janelles Verdes, Lisbon.

278 Fire-bricks.

BASTOS, JOSE F. P., *Vista Alegre, near Aveiro*—Manufacturer.

279—293 Fire-bricks.

[The fire-bricks exhibited by this and the preceding exhibitor appear to be of excellent material and well made. The raw material is not shown, but it must be of good quality, and free both from iron and from alkaline earths.—D. T. A.]

294 Flints, from Rio Maior.

295, 296 Grindstones, from Bragança.

297 Lobeiro wheat (hard), used for Italian paste, from the province of Estremadura.

298 Hard-binding wheat, from the province of Estremadura, district of Lisbon.

FICALHO, MARQUIS DE—Producer.

299 Hard wheat, from the province of Alemtejo, council of Serpa.

ROQUE, JOSE JOAQUIM, *Delgado*—Producer.

300 Hard wheat.

FICALHO, MARQUIS DE—Producer.

301 Hard wheat, from the province of Alemtejo, council of Serpa.

302 Hard wheat, from the province of Beira, council of Figueira.

303 Hard straw wheat (Greek seed), from the province of Estremadura, district of Santarem; of good quality for dough or paste.

304 Hard wheat, from the province of Alemtejo.

FORTE BOA, VISCOUNT DE—Producer.

305 Common hard wheat, from the province of Estremadura, district of Santarem.

306 Hard black-bearded wheat, from the province of Estremadura.

BENAGAZIL, VISCOUNT DE—Producer.

307 Hard grey wheat.

308 Giant wheat, from the province of Alemtejo, district of Evora.

309 Ear of giant wheat, from the province of Alemtejo, district of Evora.

AZEVEDO, JOAÓ RODRIQUES DE—Producer.

310 Brook wheat, fourth quality.

311 Soft wheat, from Gollegã.

XAVIER, ANSELMO MANUEL—Producer.

312 Wheat, first quality, from Benavente.

313 Soft wheat, from Benavente.

314 Soft wheat, from Setubal.

315, 316 Soft wheat, from the island of Graciosa, Azores.

FICALHO, MARQUIS DE—Producer.

317 White tender wheat.

ALMEIDA, JOAÓ VINCENT DE—Producer.

318 Wheat, second quality, from the province of Estremadura, district of Santarem.

SILVA, ANTONIO DA, jun.—Producer.

319 Sample of wheat, from Benavente.

320 Soft wheat, from Alcaccer.

321 Soft wheat, from the island of Graciosa, Azores.

322 Soft wheat, from Figueira.

323 Hard wheat, from Figueira.

BENAGAZIL, VISCOUNT DE—Producer.

324 Soft wheat, from the province of Estremadura, boundary of Lisbon.

BOA, VISCOUNT DE FONTE—Producer.

327 Wheat, from the province of Estremadura, district of Santarem.

BENAGAZIL, VISCOUNT DE—Producer.

328 Common hard wheat, from the province of Estremadura, boundary of Lisbon.

329 Hard wheat.

330 Soft wheat flour.

331 Rye, from the province of Minho.

332—334 Various samples of rye.

FICALHO, MARQUIS DE—Producer.

335 Rye, from the province of Alemtejo, council of Serpa.

336 Rye, from the province of Beira, Castello Branco.

337 Rye flour.

338 Maize, from the province of Minho, Vianna do Castello.

BENAGAZIL, VISCOUNT DE—Producer.

339 Maize, from the province of Estremadura, boundary of Lisbon.

340 Maize, from the province of Beira, Castello Branco.

341 White maize, from the province of Minho Caminha.

342 White maize, from the province of Minho.

COSTA, RODRIGO DA—Producer.

343 White maize, from the province of Estremadura, district of Santarem.

344 White maize, from the province of Minho Vianna.

345 Yellow maize, from the province of Alemtejo.

346 Yellow maize, from St. Michael's.

FICALHO, MARQUIS DE—Producer.

347 Yellow maize, from the province of Alemtejo, council of Serpa.

348 Yellow maize, from the province of Minho Caminha.

SILVEIRA, JOSE PEIXOTO DA—Producer.

349 Yellow maize, from the province of Estremadura, district of Santarem.

350 Yellow maize, from the province of Minho, Vianna do Castello.

351 Barley, from the province of Estremadura.

352 Samples of barley.

ALBUQUERQUE, ANTONIO SARAIVA—Producer.

353 Barley, from Beira.

354 Barley, from Alemtejo.

355 Barley, from Estremadura, Lisbon.

FICALHO, MARQUIS DE—Producer.

356 Barley, from Alemtejo, Serpa.

357 Oats, from the same district.

358 Oats, from Alemtejo.

[The province of Alemtejo, and part of Estremadura which is called the Ribatejo, are the most abundant in wheat, whilst maize is chiefly grown in Minto and Beira Alta. Beira Baixa and Traz os Montes chiefly produce rye, whilst the cultivation of oats is almost entirely confined to Alemtejo, where they are grown on the plains called Campo d'Ourique.]

- CARVAO, ANTONIO FREDERICO—Producer.
359 Yellow kidney-beans, from Estremadura, Santarem.
- SOARES, VICENTE CARLOS VAZ—Producer.
360 Yellow kidney-beans, from Estremadura, Abrantes.
- 361 Yellow kidney-beans, from Minho, Vianna do Castelo.
362 Red zebra kidney-beans, from the same district.
363 Red zebra kidney-beans, from Beira, Castello Branco.
- HENRIQUES, ANTONIO—Producer.
364 White kidney-beans.
365 White kidney-beans, from Minho, Vianna do Castelo.
- BENEGAZIL, VISCOUNT DE—Producer.
366 White kidney-beans, from Estremadura, boundary of Lisbon.
- CARVAO, ANTONIO FREDERICO—Producer.
367 White kidney-beans, from Estremadura, Santarem.
- SOARES, VICENTE CARLOS VAZ—Producer.
368 Zebra kidney-beans, from Estremadura, Abrantes.
369 Zebra kidney-beans, from Minho, Vianna do Castelo.
- SILVA, JOSE PEIXOTO DA—Producer.
370 Kidney-beans, from Estremadura, Santarem.
- PROENCA, T. TAVARES D'ALMEIDA—Producer.
371 Kidney-beans, from Beira, Castello Branco.
372 Kidney-beans, from Minho, Vianna do Castelo.
- CESAR, JOSE—Producer.
373 Spanish peas, from Estremadura, Santarem.
374 Spanish peas, from Estremadura, Azambuja.
- FICALHO, MARQUIS DE—Producer.
375 Spanish peas, from Alentejo, Serpa.
- BENEGAZIL, VISCOUNT DE—Producer.
376 Spanish peas, from Estremadura, boundary of Lisbon.
377 Broad-beans, or Windsor beans.
- BOA, VISCOUNT DA FONTE—Producer.
378 Large Windsor beans, from Estremadura, Santarem.
- 379 Samples of peas.
380 Specimens of lentils.
- BONNET, CARLOS, *Lisbon*—Producer.
381 Samples of Carol beans.
- FICALHO, MARQUIS DE—Producer.
382 Various lupins.
- 383 Specimens of lupins.
384 Rice, produced from Carolina seed, in Estremadura.
385 The same, from Estremadura, Coima.
- BELMONTE, COUNT DE—Producer.
386, 387 Rice, produced from Carolina seed, in Estremadura, Otta.
388, 389 Rice in the shell.
- SOARES, VICENTE CARLOS VAZ—Producer.
390, 391 Millet, from Estremadura, Abrantes.
- 392 Sweet almonds, from Algarve.
- BRETTES, MANOEL F.—Producer.
393 Hard almonds, from Estremadura, Torres Novas.
- FONSECA VAZ, ALEXANDRE PINTO DA—Producer.
394 Filberts, from Estremadura, Santarem.
395 Walnuts, from Estremadura, Torres Novas.
396 Walnuts, from Estremadura, Sardoal.
- 397 Walnuts. 398 Nuts.
399 Peeled dried chestnuts, from Beira Castello, Braganca.
- FICALHO, MARQUIS DE—Producer.
400 Sweet acorns, from Alentejo, Serpa.
- NOGUEIRA, AIRES DE SA—Producer.
401 Arachides, from Estremadura, boundary of Lisbon.
- BATALHA, FRANCISCO RODRIGUES—Producer.
401a Arachides, from Angola.
- BENAGAZIL, VISCOUNT DE—Producer.
402 Ricinus (*carrapateira*), from Estremadura.
- 403 Dried figs.
404 Dried pears.
405 Dried plums.
- FONSECA VAZ, ALEXANDRE PINTO DA—Producer.
406 Dried plums, from Estremadura, Sardoal.
- ALVES, ESTEVAR JOSE DA SILVA—Producer.
407 Dried cherries.
- 408 Dried plums.
409 Dried grapes (raisins).
- MENDES, RODRIGO PEREIRA—Producer.
410 Dried peaches, from Estremadura.
- FONSECA VAZ, ALEXANDRE PINTO DA—Producer.
411 Dried peaches, from Estremadura.
- 412 Preserved plums.
413 Preserved figs.
414 Preserved peaches.
415 Preserved pears.
416, 416a Preserved apricots.
All from Trás os Montes, Villa Real.
- THE NUNS OF COIMBRA—Producers.
417 Preserved fruits, of various sorts, from Beira Coimbra.
- GOMES, J. L.—Producer.
418—420 Dried figs, from Algarve.
- 421 Preserved peaches, from Estremadura, Lisbon.
422 Preserved figs.
423, 424 Quince marmalade, from Estremadura, Lisbon.
- 425 Preserved plums, from Estremadura, Lisbon.
426 Preserved pears, from Estremadura, Lisbon.
427 Preserved peaches, from Beira Coimbra.
428 Preserved plums, from Estremadura, Lisbon.
429 Preserved apricots.
430 Preserved tangerines.
431 Preserved figs.
432 Preserved cherries.
433 Preserved peaches.
The last five articles from Estremadura, Lisbon.
434 Sugared almonds, from Moncorvo, Trás os Montes.
435 Sugared crisp almonds.
436 Preserved citron, from Estremadura, Santarem.
437 Preserved Seville oranges, from Estremadura, Santarem.
438 Preserved pears, from Estremadura, Lisbon.
439 Almonds cased with chocolate.
- FICALHO, MARQUIS DE—Producer.
440 Olives, from Alentejo, Serpa.
- FONTE BOA, VISCOUNT DE—Producer.
441 Black olives, from Estremadura, Santarem.
- 442 Black olives, from Beira, Guarda.
443 Black olives, from Estremadura, Lisbon.
444 Olives, from Elvas.
445 Capsicums.
445a Guinea pepper.

- 446 Coffee, from Madeira.
 447 Coffee, from Angola.
 448 Coffee, from Mosambique.
 449 Coffee, from Timor.
 450 Coffee, from Cape Verde.
 451 Coffee, from St. Thomas's.
 452 Capers, from Estremadura.
 453 Starch, from Alemtejo, Evora.
- HOLBECH, MANOEL MARIA—Producer.
 454 Starch, from Estremadura, Santarem.
- BASTOS, FERREIRO PINTO—Producer.
 455 Lump sugar, in loaf, from Estremadura, Lisbon.
- 456 Lump sugar, in loaf.
 456A Pounded sugar.
 457 Samples of sugar.
- BATALHA, FRANCISCO RODRIGUEZ—Producer.
 458 Gum copal, from Angola.
- 459 Pitch, from Estremadura, Santarem.
- CALHEIROS, JOAQUIM LOPES—Producer.
 460 Olive oil, from Estremadura, boundary of Lisbon.
 461 Sample of olive oil.
- PROENÇA, F. TAVARES D'ALMEIDA—Producer.
 462 Olive oil, from Beira Castello Branco.
 463, 464 Samples of olive oil.
- MACEDO, JOAQUIM JOSE DA COSTA—Producer.
 465 Olive oil, from Estremadura, Gollega.
 466 Samples of olive oil.
- LARCHER, JOAQUIM—Producer.
 467 Olive oil, from Alemtejo, Portalegre.
 468 Sample of olive oil.
- FARROBO, COUNT DE—Producer.
 469, 470 Olive oil, from Estremadura, Alhandra.
- PINTO, JOSE BORGES—Producer.
 471, 472 Olive oil, from Alto Douro, Folgoso.
- ALMEIDA, SILVA, & Co.—Producers.
 473 Olive oil, from Estremadura, Lisbon.
- 474—477 Various samples of olive oil.
- MELLO, J. D'ALBUQUERQUE—Producer.
 478, 479 Olive oil, from Beira.
- ALMEIDA, SILVA, & Co.—Producers.
 480 Olive oil, from Estremadura, Lisbon.
- FICALHO, MARQUIS DE—Producer.
 481, 482 Olive oil, from Alemtejo, Serpa.
- LINHARES, COUNT DE—Producer.
 483, 484 Olive oil, from Estremadura, Alpiarca.
- 485, 486 Olive oil, from Minho, Vianna do Castello.
 487—489 Oil of sweet almonds.
 490 Nut oil.
 491, 492 Castor oil.
- BURNAY, —, —Producer.
 493, 494 Oil from the Purgueira tree, Estremadura, Lisbon, in Alcantara.
 495 Linseed oil, from Estremadura, Lisbon, in Alcantara.
- BATALHA, FRANCISCO RODRIGUES—Producer.
 495A Arachide oil, from Angola.
- BURNAY, VICENTE—Producer.
 496 Linseed oil, from Estremadura, Lisbon.
- BATALHA, FRANCISCO RODRIGUES—Producer.
 496A Palm oil, from Angola.
- LEAL, F. MENDES CARDOSA—Producer.
 497 Essential oil of lavender.
 498 Oil of rosemary.
 499 Oil of juniper.
 500 Oil of lemon.
 501 Citric acid.
 502 Tartaric acid.
- HIRSCH, J. M., & BROTHERS—Producers.
 503 Oxalic acid.
- SERZEDELLO & Co.—Producers.
 504 Tartaric acid.
- BATALHA, F. RODRIGUEZ—Producer.
 505 Orchilla wood, from Angola.
- 506 Orchilla rock, from Angola.
 506A Orchilla wood, from St. Thomas.
 507 Orchilla wood, from Mozambique.
 507A Orchilla rock, from Minho Vianna do Castello.
 508 Orchilla rock, from Cape Verde.
 508A Orchilla rock, from Madeira.
- BATALHA, FRANCISCO REIZ—Producer.
 509 Orchilla wood, from Estremadura, Cabo de Roca.
- MONTEIRO, MANOEL BAPTISTA—Producer.
 510 Sumach, from Beira Guarda.
 511 Sumach, from Algarve.
- 512 Sumach, in powder.
 513 Samples of sumach.
 514 Bark of the cork tree.
- LEAL, F. MENDES CARDOSO—Producer.
 515 Absolute alcohol.
 516 Sarsaparilla, from Santarem.
- NORBERTO, P. F., Lisbon—Producer.
 517 Capsules of copaiba, from Estremadura, Lisbon.
- BOA, VISCONT DE FONTE—Producer.
 518 Mustard seeds, from Estremadura, Santarem.
- 519 Maccaroni, from Estremadura, Lisbon.
 520—528 Italian pastes of various kinds, and samples of vermicelli.
 529 Biscuits of different sorts, for shipping, from Estremadura, Lisbon.
- THE DUKE OF PALMELLA—Proprietor.
 530 A hemp tree, from the model farm conducted by Mr. Gaghardi.
 531, 532 Prepared hemp.
 533 Raw flax.
 534 Specimens of flax.
- FICALHO, MARQUIS DE—Producer.
 535 Fibre of aloes or thread of aloes, from Alemtejo, Serpa.
- 536, 537 Rushes, from Estremadura, Santarem.
 538 Raw cotton, grown near Lisbon.
 539, 540 Raw cotton, from Algarve.
- BATALHA, FRANCISCO RODRIGUES—Producer.
 541 Manioca, from Angola.
 542 Manioca powder.
 543 Tapioca.
- HOLBECH, MANOEL MARIA—Producer.
 544 Thistles, from Estremadura, Santarem.
- 545, 546 Toothpicks, from Marquesinhas.
 547 Toothpicks (called double flowered), from Coimbra.
 548 Toothpicks, from Lisbon.
 549 Toothpicks (called double beaked), from Coimbra.
 550, 551 Toothpicks (called single flowered), fromimbra.

FICALHO, MARQUIS DE—Proprietor.

552 A box made of different varieties of woods. The box was manufactured by workmen in the villages, and the woods were produced on the exhibitor's estate.

THE INSPECTOR-GENERAL OF PUBLIC WORKS.

- 553 Pine wood, from Leiria.
 554 Plum-tree wood, from Caldas do Rainha, Leiria.
 555 Filbert-tree wood, from Collares, near Lisbon.
 556 Olive-tree wood, from Santarem.
 557 Chestnut-tree wood, from Alentejo, Portalegre.
 558 Wild pine, from Caldas da Rainha.
 559 Elm or osier, from Santarem.
 560 Mulberry-tree wood, from Lisbon.
 561 Olive-tree wood, from Santarem.
 562 Pine wood, from Leiria.
 563 Beech-tree wood, from Lisbon.
 564 Ash-tree wood, from Lisbon.
 565 Cherry-tree wood, from Lisbon.
 566 Cypress-tree wood, from Santarem.
 567 Cork-tree wood, from Villa Viçosa, Evora.
 568 Holm wood, from Lisbon.
 569 Poplar wood, from Lisbon.
 570 Oak timber, from Minho.

- 571 Cherry-tree wood, from Minho.
 572 Plane-tree wood, from Minho.
 573 White acacia wood.
 574 Olive-tree wood.
 575 Walnut-tree wood.
 576 Orange-tree wood.
 577 Box-tree wood.

The five last-named specimens all from Santarem.

LOULE, MARQUIS DE—Producer.

- 578 Azarola, from the exhibitor's estates at Villa do Rey, near Setubal.
 579 Carol bean-tree wood, from Algarve.

FONSECA VAZ, ALEXANDRE PINTO DA—Producer.

- 580 Wood of the arbutus tree, from Santarem.

BASTOS, PINTO—Producer.

- 581 Wood of the wild olive tree, from Lisbon.

ROYAL MARINE ARSENAL.

- 582 Wood of the common pine, from Matas Nacionaes de Leiria.
 583 Pine wood, from Leiria forests.
 584 Pine wood, from Caparica, adjoining Lisbon.
 585 Oak timber.
 586 Wood of the cork tree, from Alentejo.
 587 Wood of the ash tree, from Alentejo.
 588 Wild mahogany, from the Bissao Islands.
 589 Wood of the Couta tree, from the Bissao Islands.
 590 Tacula wood, from Angola.
 591 Teak wood, from Goa.
 592 Sico wood, from Goa.

The woods exhibited by the Inspector-General of Public Works, from No. 553 to 570, were cut in the year 1843 for the purpose of ascertaining their strength for the building of edifices. Those exhibited by the Royal Marine Arsenal (from No. 582 to 592), are employed in naval constructions. Of all the woods of the continent, as well as of the possessions, there is a great abundance: there are, however, certain trees to which a preference is given in the provinces of the north of Portugal, as the chestnut, the poplar, the oak; in the Alentejo, the cork tree, the palm tree, the olive tree. The best pine is from the Royal Naval National Forests, near Leiria, and extending to ten square leagues.

MATTOS, J. B. DE—Producer.

- 593, 594 Honey, from Santarem.
 595 Honey, from Castello Branco.

FICALHO, MARQUIS DE—Producer.

- 596 Honey, from Serpa.

597 Honey, from Bragança.

598 Honey, from Evora.

NORBERTO, P. F., Lisbon—Producer.

- 599 Capsules of cod-liver oil, from Lisbon.

CORREA, VALERIO GOMES—Producer.

- 600 White merino wool, from Covilha.

FICALHO, MARQUIS DE—Producer.

- 601 Black wool, from Serpa.
 602 Black wool, from Braganza.
 603 White wool, from Serpa.

THE DUKE OF PALMELLA—Producer.

604—610 Yellow raw silk and white raw silk. These samples were produced by silkworms bred at exhibitor's estate in Calhariz, near Setubal.

GARCIA, JOSE CARDOZO—Producer.

611—615 Yellow raw silk, produced at Bemriver, Vado Douro.

- 616 Yellow raw silk, from Bragança.

CARVALHO, MANOEL LUCAS DE—Producer.

- 617 Sample of white wax.

- 618 White wax, from Castello Branco.

FICALHO, MARQUIS DE—Producer.

- 619 Yellow wax, from Serpa.

BRETES, MANOEL FERREIRA—Producer.

- 620 White wax, from Torres Novas.

FICALHO, MARQUIS DE—Producer.

- 621 White wax, from Serpa.

BRETES, MANOEL FERREIRA—Producer.

- 622 Yellow wax, from Torres Novas.

- 623 Samples of yellow wax.

CARVALHO, MANOEL LUCAS DE, Lisbon—Producer.

- 624 Yellow wax.

NORBERTO, P. F.—Producer.

- 625, 626 Varieties of gelatine.

FONSECA, JOAQUIM LOPES TAVARES DA—Producer.

- 627 Glue, from Santarem.

PEIXOTO, JOAQUIM CESARIO—Producer.

- 628 Glue, from Lisbon.

BASTOS, JOSE F. PINTO, Lisbon—Producer.

- 629 Large animal charcoal.
 630 Fine animal charcoal.

BASTOS, FERREIRA PINTO, Lisbon—Producer.

631 Decimal scales, made by a Portuguese workman at the establishment of the exhibitor.

POLICARPO, ANTONIO, Lisbon—Manufacturer.

- 632 Agricultural implements (connected with cutle
 633 Case of surgical instruments.

CERQUEIRA, MANOEL JOZE DA SILVA, Guimaraes, Minho—Producer.

- 634 A variety of seissors.

The manufactories of Guimaraes supply the great part of Portugal with these articles.

ROYAL MILITARY ARSENAL, Lisbon.

635 A portable blunderbuss, which may be used either as a carbine or pistol, as the stock can be detached.

- 636 A Roman gun.

637 An improved gun, having tubes on each side of barrel, one being for powder and the other for shot, capable of containing a sufficiency for thirty charges. Invented by P. Zodimo.

638 Gun, with percussion locks and a magazine for the powder. Manufactured by Jose de Freitas.

639 A gun, with covered locks.

640 Model of a rifle, which may be used either with percussion caps or flints. Manufactured by Joaquim Jose dos Santos.

BOBONE, DOMINGOS JOZE DE AZEVEDO, *Lisbon*—
Producer.

641, 642 Leather covers for the locks of cannons.

643 Improved cannon locks.

644 Carronade locks, with improvements.

645 Improved screw for the touch-holes of cannons.

646 Hatchets for infantry corps.

LOUREIRO, ANTONIO GOMES, *Thomar*—Producer.

647 Cards for carding fine cotton.

These cards are made by hand, and are used in the exhibitor's manufactory.

NEVES, ALEXANDRINO JOSE DAS, *Lisbon*—Producer.

648 Mould to cast three typographical letters, with spring and matrix.

649 Matrix bag for the moulds of three letters, and mould for improving type.

650 Moulding for measuring type.

651 Mould for casting type.

SPINNING AND WEAVING COMPANY, *Torres Novas*,
Estremadura.

652 A key from Santarem, made by a working locksmith.

653 Linen thread, from Vianna, Minho, made by hand.

654 Linen thread, bleached, from Vianna, Minho.

655 Sail-cloth canvas.

656 Canvas for sails.

657 Ravensduck.

The three last articles being similar to those manufactured for the Royal Portuguese Navy.

658—660 Samples of sail-cloth.

661—664 Fancy linen drill.

665 Duck, with stripes.

666 Plain ravensduck.

667 Linen bed-ticking.

668 Ordinary bed-ticking.

669 Bagging sack-cloth.

670 Ravensduck.

671 Ravensduck, second quality.

672 Superior linen sheeting.

673 Fine linen sheeting.

674 Ordinary sheeting.

675, 676 Linen cloth sheeting.

677 Ordinary ravensduck.

The former six articles all manufactured in Vianna.

678 Superfine linen cloth.

679 Fine linen cloth, from Guimaraes, district of Brags, Minho.

680 Brown linen drill, from Torres Novas.

681 Brown drill, from the same place.

682 Cotton and linen drill.

BARBOZA, JOZE, *Oporto Mills*—Manufacturer.

683 Cotton drill, and cotton and silk shawls.

WEAVING COMPANY, *Lisbon*—Manufacturers.

684—700 Fancy cotton drills.

701, 702 Scotch plaids.

703, 704 Ordinary calico.

705, 706 Bed-ticks.

707—712 Cotton shawls.

PEREIRA, JACINTO DA SILVA, *Porto*—Producer.

713, 714 Cotton shawls.

SPINNING AND WEAVING MILLS, *Lisbon*—Manufacturers.

715 Cotton blankets.

LOUREIRO, ANTONIO GOMES, *Thomar*—Producer.

716 Cotton thread, No. 20.

717 Cotton thread, No. 24.

718 Skeins of cotton thread, single and unbleached.

719 Cotton thread, No. 44.

720 Cotton thread balls, No. 42.

SPINNING AND WEAVING MILLS, *Vizella, near Oporto*—
Manufacturers.

721 Unbleached cotton thread.

722 Cotton thread, bleached.

SPINNING AND WEAVING MILLS, *Lisbon*—Manufacturers.

723 Samples of cotton warping twist.

724 Samples of weft.

725 Skeins of blue and white cotton thread.

726 Skeins of blue tambour thread.

LOUREIRO, ANTONIO GOMES, *Thomar*—Producer.

727 Cotton stockings.

MIRANDA, BATALDA, & Co., *Lisbon*—Producers.

728—737 Printed cottons, dark-blue ground.

738—747 Printed cottons, white ground.

MOLLER & WEIKE, *Bemfica, near Lisbon*—Producers.

748—755 Printed cotton handkerchiefs, of various colours.

LUZ, FILIPPE JOSE DA, *Rio de Monro, near Cintra*.

756—760 Printed cotton handkerchiefs, of different colours.

761—769 Printed cotton shawls.

PINTO & Co., *Ponte Nova, Alcantara, near Lisbon*—
Producers.

770—774 Printed cotton shawls.

LUZ, FILIPPE JOSE DA—Producer.

775, 776 Printed cottons.

PINTO & Co., *Ponte Nova, Alcantara, near Lisbon*—
Producers.

777—786 Printed coloured cottons.

LARCHER & Co., *Portalegre, Alemtejo*—Producers.

787, 788 Superfine green cloth, and superfine black cloth, both made of Saxony wool.

789 Mixed cloth, made of Spanish wool.

790 Cloth, mulberry colour, made of Spanish wool.

791 Cloth, bronze colour, made of Spanish wool.

792 Dark-blue cloth, Spanish wool, second quality, for military uniforms.

793 Coarse woollen cloth, Saragossa wool.

794 Superfine black kerseymere, Saxony wool.

795—797 Ordinary kerseymere, Portuguese wool, second quality.

VALERIO, GOMES CORREA, & BROTHERS, *Covilha*—
Producers.

798—800 Blue cloth.

801 Green cloth.

802 Cloth, chestnut colour.

803, 804 Coarse woollen cloth.

CAMPOS, MELLO, & BROTHERS, *Covilha*—Producers.

805 Checked cashmere.

806 Striped woolsey.

807 Linsey-woolsey.

808 Stout white woollen cloakings.

All from Vianna do Minho.

CORSINO, JOAQUIM DA FONSECA, *Guarda, Beira*—
Producer.

809 A blanket.

LAFABRIE, P. A., *Alemquer, near Lisbon*—Producer.

810—813 Various blankets.

814—826 Woollen shawls, of various colours.

827—831 Check shawls, of two colours.

832—839 Printed woollen shawls.

840 Cotton and woollen tartan.

841, 842 Ponchos. 843—850 Woollen caps.

DAUPIAZ & Co., *Calvario, Belem, near Lisbon*—Producers.

851, 852 Ponchos.

853—855 Wool and cotton waistcoat pieces.

856—859 Wool, silk, and cotton vest pieces.
860—863 Woollen Scotch plaid.
864, 865 Scotch plaid, wool and cotton.
866—871 Tartan shawls.
872—875 Woollen net shawls.
876—881 Printed woollen shawls.
882 Wide Spanish sash belts.
883 Narrow Spanish sash belts.
884 Ordinary Spanish sash belts.
885, 886 Children's net woollen jackets.
887—889 Net comforters.
890, 891 Wool and silk shawls.
892, 893 Wool and silk table covers.
894 Medium carpet.
895—904 Various carpets.

LIMA, JOSE MARIA DE, *Porto*—Producer.

905 Gold cloth.
906, 907 Silver cloth.
908 Gold and crimson cloth.

CARVALHO, GUILHERME RICARDO DE, *Lisbon*—
Producer.

909 White and gold damask.
910 Crimson and gold lustring.
911 Purple and gold lustring.
912 Purple and gold damask.
913 Blue llama, starred with gold.
914 Llama, colour of smooth broom.
915 Llama, white broom.
916 Crimson llama.
917 Green llama.

MOREIRA, MANOEL CUSTODIO, *Oporto*—Producer.
918 Sample of black velvet.

CARVALHO, RAIMUNDO JOAQUIM DE, *Oporto*—Producer.
919 Broad black velvet.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
920 Piece of velvet, for waistcoats.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
921 Piece of Scotch velvet, for waistcoats.
922, 923 Checked velvets, for waistcoats.
924 Striped velvet, for waistcoats.
925 Black velvet.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
926 Sample of black satin.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
927 Sample of black satin.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
928 Light-blue figured satin.
929 Embroidered satin, for waistcoats.
930 Lady's worked satin dress.
931—934 Embroidered satin, for waistcoats.

PIMENTEL, JOAQUIM MARCELLINO, *Lisbon*—Producer.
935 Gros de Naples, with satin stripes.
936 Black watered gros de Naples.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
937, 938 Striped and shot gros de Naples.

MARTINS, RAIMUNDO JOAQUIM, *Oporto*—Producer.
939 Gros de laine.
940—942 Fancy shot silks.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
943, 944 Gros de Naples shot silk.
945 Gros de Naples, with green satin stripes.
946 Dark gros de Naples, with satin stripes.
947 Coloured serge, with satin stripes.
948 Double black silk.

BARBOZA, J., *Oporto*—Producer.
949, 950 Silk, for dresses.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
951 Black grogram, for waistcoats.
952 Blue grogram, for the same.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
953 White satin.

RAMOS, FRANCISCO ANTONIO, *Lisbon*—Producer.
954 Patterns of different silks.

DA SILVA, JOAQUIM JOSE, *Oporto*—Producer.
955 Black, and blue and black, silk shawls.

MOREIRA, MANOEL CUSTODIO, *Oporto*—Producer.
956 Embroidered black satin shawl.

MARTINS, RAIMUNDO JOAQUIM, *Oporto*—Producer.
957 Satin neckerchiefs.
958 Large black handkerchiefs.
959 Men's satin handkerchiefs.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
960 Embroidered silk neckerchiefs.
961 Ladies' coloured striped silk handkerchiefs.
962 Black silk neckerchiefs.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
963 Shot cord-silk cravat.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
964 White watered silk.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
965 Quilted damask, crimson and gold colour, for furniture.

DA SILVA, JOAQUIM JOSE, *Oporto*—Producer.
966 Yellow damask.
967 Crimson damask.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
968 Men's plain silk stockings.
969 Silk caps.
970 Silk net frock.
971 Grogram ribbons.
972 Damask carriage linings.

BORGES, SOTERO ANTONIO, *Lisbon*—Producer.
973 Hat, trimmed with silk, with loop.
974 Beaver hat, trimmed, without loop.
975, 976 Silk hats.
977 Beaver hat.

ROXO, FRANCISCO DA COSTA, *Lisbon*—Producer.
978 White beaver hat.
979 Black beaver hat.
980 Two leather caps.
981, 982 French silk plush hats.
983, 984 Portuguese silk plush hats.

HIRSCH, J. M., & BROTHERS, *Lisbon*—Producers.
985 White beaver hat.
986 Black beaver hat.

TOJAL, COUNT DE, *Abilheira, near Lisbon*—Producer.
987 Printing-paper.
988 Blotting-paper.
989 Writing-paper.

RODRIGUEZ, J. FRANC, *Porto*—Producer.
990 Samples of ropes.

DA SILVA, MANOEL ANTONIO, *Lisbon*—Producer.
991—1014 Varieties of shot.

BACHELAY, JOAQUIM, *Lisbon*—Producer.
1015 Cast-iron garden-seat.
1016 Black cast-iron vase.
1017, 1018 Cast-iron vases.
1019 Section of cast-iron balcony.
1020 Specimen of cast-iron ornament.

PINTO & SOUZA, *Lisbon*—Producers.
1021 A diamond enamelled brooch.

MAMEDE BERNARDINO, G., *Oporto*—Producer.
1022 A set of amethysts in gold filigree work.
A brooch and pair of bracelets, set with amethysts.

A brooch and pair of ear-drops of filigree work.
Two gold chains.

RODRIGUES, JOSE, *Oporto*—Producer.

1022A Silver snuff-box.

FRANCO, ANTONIO DE, *Oporto*—Producer.

1022B A filigree chain.

1022C A gold chain.

ALFONSO, MANOEL JOAQUIM—Producer.

1023—1029 Various decanters.

1030—1036 An assortment of tumblers.

1037—1043 A variety of wine glasses.

BASTOS, JOSE FERREIRA PINTO, *Vista Alegre, Aveiro*—
Producer.

1044—1046 Painted glass.

1047 Basin and jug, gilt porcelain.

1048 Ornamental tureen.

1049 Painted tureen, bistro.

1050 Painted sauce tureen.

1051—1074 An assortment of plates and dishes, of
different patterns and sizes, gilt, and variously ornamented
with paintings, &c.

1075—1090 Cups and saucers, of various colours and
patterns, ornamented and gilt.

1091 A tea-service, white and gold, containing twenty
pieces, viz., a tea-pot, coffee-pot, sugar-box, milk pot,
butter-cooler, slop-basin, two plates, and twelve cups and
saucers.

1092 A tea-service, green and gold, containing twenty
similar pieces.

1093 Basin, with cover, and plate.

1094 Porcelain night-lamp.

1095 Ornamental basin, with saucer.

1096 A variety of china door-handles.

1097 A tureen, gilt.

1098 A vegetable-dish.

1099 A foot-pan.

1100 A fruit-stand.

1101—1104 Dishes of various sizes.

1105—1108—Dinner and dessert plates.

1109 A stoneware bottle.

1110 A large earthen wine or oil jar, from Alemtejo.
Some of these jars are made to contain upwards of six pipes.

[These vessels of simple form, used for holding oil,
fruit, water, grain, &c., are intended for domestic rather
than for ornamental purposes. Enormous vessels of this
class have been made in all countries from the earliest
periods.]

The ancient amphora, the jars found near Antium above
6½ feet high, the jar or tub of Diogenes, which was a
description of earthen vessel or jar, distinguished from
the amphora by its large mouth and comparatively flat-
tened base (its shape was more of a gourd or pot, its size
large enough to have rendered it applicable to the pur-
poses of a cistern or water-butt), are all analogous in form
to those now manufactured in various parts of the globe.

Large vessels are made in France, principally in Au-
vergne and in the Pyrenees; in Tuscany, in the neigh-
bourhood of Leghorn, where they are called *coppo*, in
Sienna *csiro*, and *orcio* in the Florentine territory (the
orcio in the Musée Céramique measures 4 feet 7 inches, by
3 feet 3 inches).

Some of these are of enormous diameter and of extra-
ordinary capacity.

In Spain, similar vessels are termed *tinaja*, and are of
the most gigantic size known; some of them requiring
twenty men to lift them from the kiln.

A tinaja in the Musée Céramique at Sèvres is upwards
of 10 feet high, by 5 feet 2 inches in diameter; and Baron
Percy, a surgeon of the Imperial army, states that he has

measured some 13 feet 1½ inch high, by 6 feet 6 inches
in diameter. They had probably been introduced into
Spain by the Moors, as similar vessels are found among
the Arabs of Mount Atlas.

The oil jars of the Forty Thieves in the Arabian Nights
were probably of this description. They are called
koupchines by the Caucasian tribes of Armenia, by whom
they are used to contain wine.

Gigantic vessels were also made by the Boshmen of the
Cape, and by the Indians of Java, who use them for water;
and for holding gold-fishes.

Fragments of gigantic vessels are found on the borders
of the Ohio. In the class of gigantic pieces may also be
placed the vessel that was made to contain the famous
turbot (*Rhombus*) of Domitian, and for the baking of which
he caused an oven to be constructed: this vessel, according
to the estimate of M. Brongniart, cannot have been less
than between 6 and 7 feet in diameter.]

1111 Two earthen pots.

Remarkable for their great resistance of heat, notwith-
standing the thinness of the clay.

SOUZA, JOAQUIM BAPTISTA DE, *Lisbon*—Producer.

1112 worked white mat.

1113 A coloured mat.

FERREIRA, —, *Lisbon*—Producer.

1114 A small white mat.

1115 A small coloured mat.

FUTCHER, RAPHAEL, *Lisbon*—Producer.

1116 A set of drawers, made entirely of the woods of
the country.

1117 A wardrobe.

1118 A bedstead.

1119 An invalid's chair.

RANGEL, A. P., *Lisbon*—Producer.

1120 A wine-cask or vat.

Similar articles are sometimes made to contain thirty
pipes or more.

FIGUEREDO, JOSE VALENTIM DE, *Lisbon*—Producer.

1121 A saddle.

FIALHO, DOMINGOS DA CUNHA, *Lisbon*—Producer.

1122 Samples of sole leather.

BRETES, MANOEL FERREIRA, *Lisbon*—Producer.

1122A Samples of sole leather.

FIALHO, DOMINGOS DA CUNHA, *Lisbon*—Producer.

1123 A calf-skin.

MONTEIRO, MANOEL BAPTISTA, jun., *Lisbon*—Producer.

1123A A calf-skin.

BARRETO, FRANCISCO TAVANES, *Lisbon*—Producer.

1123B A calf-skin.

DA SILVA, CHRISTOVAO J. FERNANDES, *Lisbon*—
Producer.

1123C A calf-skin.

BELLO, JOSE GUIFAO, *Macao, Santarem*—Producer.

1123D A calf-skin.

1124 Red morocco leather, from Lisbon.

1124A Another sample, larger size.

1124B Dark blue or purple morocco leather, from
Lisbon.

1125 A sheep-skin, from Lisbon.

BRETES, MANOEL FERREIRA, *Torres Novas*—Producer.

1125A A sheep-skin, from Torres Novas.

1125B Yellow sheep-skin, from Lisbon.

1125C White sheep-skin, from Lisbon.

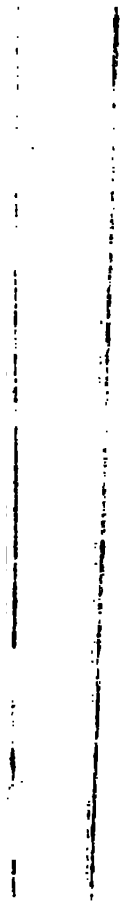
BELLO, JOSE GUEIFAC, *Macao, Santarem*—Producer.

1126 Goat-skins.

- FRAGATA, COSME AUGUSTO, *Santarem*—Producer.
 1126a A leather fire-bucket.
 1126b Pig-skin for wine, from Santarem.
- ROYAL MARINE ARSENAL, *Lisbon*.
 1126c A peasant's leather wine-bottle.
- REIS, JOAQUIM JOSE DOS, *Lisbon*—Manufacturer.
 1127—1133 Ladies' parasols, with polished wood handles, and covered with coloured striped silk.
 1134—1139 Ladies' parasols, covered with white, black, and coloured silk, with steel ribs, and handles variously ornamented with ivory.
 1140—1142 Parasols of white, black, and coloured-striped silks, for children.
 1143 White silk parasol to fold on the side, with steel ribs, and plated steel handle ornamented with ivory.
 1144—1150 Gentlemen's black silk parasols, with steel and whalebone ribs, and ivory and ornamental wood handles.
- LATA, MANOEL RODRIGUEZ, *Lisbon*—Producer.
 1151 Sealing-wax of different colours.
- RUSSEL, D. VICENTE, *Lisbon*—Producer.
 1152, 1153 Stands of artificial flowers (passion-flowers and camelias).
- BARON, FELIX, *Lisbon*—Producer.
 1154 Ladies' kid leather gloves.
- GARDE, —, *Lisbon*—Producer.
 1155 Fringe and tassels for curtains.
 1156, 1157 Bell-pulls and bell-ropes.
- ROYAL TOBACCO CONTRACTORS, *Lisbon*—Manufacturers.
 1158—1164 Samples of white and yellow soap, of various qualities.
- 1165 Box of fine threads, in the form of flowers, from Guimaraes, Minho.
 1166 A similar box, in the shape of dolls.
 1167 Small skeins of fine sewing thread.
 1168 A tree made of fine thread, from Guimaraes.
- MOREIRA, MANOEL CUSTODIO, *Porto*—Producer.
 1169 Open thread stockings.
 1170 Open and closed stockings, from Braga Minho.
 1171 Silk for sieves, from Bragança, Tras os Montes.
- ROYAL TOBACCO CONTRACTORS, *Lisbon*—Manufacturers.
 1172—1195 An extensive assortment of various qualities and descriptions of snuff.
 1196—1209 Various boxes of cigars, of different qualities and sizes.
 1210 Leaf tobacco, cut small.
 1211 Box of paper cigars.
 The exhibitors have the exclusive manufacture, by Royal charter, of tobacco and soap.
- CARVALHO, MANOEL LUCAS DE, *Lisbon*—Producer.
 1212 Plain wax candles.
 1213 Painted wax candles.
 1214—1221 Ornamental articles in wax.
- 1222 A gilt spindle of singular construction, from Braga, Minho.
- BONNET, CARLOS, *Lisbon*—Producer.
 1223 An ornamental marble basket.
- CAETANO, IGNACIO, *Lisbon*—Producer.
 1224 Round table, with marble slab, and gilt.
- ROYAL NAVAL ARSENAL, *Lisbon*.
 1225 The arms of Portugal, carved in wood.
 1226, 1227 Capitals, for columns, carved in wood.
 1228 Ornamental carvings in mahogany.
- CAETANO, IGNACIO—Producer.
 1229—1231 Various ornamental carvings.
- 1232 Carvings in wood, "Jesus Christ and St. Francis."
- 1233 Oil-skin table-cover, with the sketch da Villa da Praya, Island of Terceira, and representing the attack which took place on the 11th of August, 1829, between the troops of Queen Donna Maria II. and those of Don Miguel.
- VIEIRA, M. I., *Braga, Minho*—Producer.
 1234 Figure of Prometheus, in ivory. This figure is represented in the annexed plate.
 1235 Carving in ivory: Jesus Christ.
- 1236 An ivory chain, from Guimaraes, Minho.
- NUNES, JOAC PAULO, *Lisbon*—Manufacturer.
 1237 A writing-desk, made of ebony, inlaid with ivory. The property of His Majesty the King of Portugal.
- MONTEIRO, JOSE PEDRO—Producer.
 Various lithographic sketches, including,
 1238 The cathedral of Guimaraens.
 1239 Fair on the Great Field, near Lisbon.
 1240 The Exchange.
 1241 The convent of Serra do Pilar, Oporto.
 1242 The Royal Palace of Ajuda (unfinished).
 1243 The church of Nossa Senhora da Conceição, at Ribeira Velha, Lisbon.
 1244 A portion of the town of Cintra.
 1245 The entrance of the Church of the Convent of Batalha, near Leiria.
 1246 The Convent of Pena at Cintra, now the residence of the King D. Fernando.
 1247 The Aqueduct das Aquas livres, near Lisbon.
 1248 The Castle of the town of Guimaraes, province of Minho.
 1249 The Bridge and Village of Sacavem, near Lisbon.
 1250 The Royal Palace of Cintra.
- THOMAR, CONDE DE—Proprietor.
 1251 Lithographic sketch: the Window in the Hall of the Chapter of the Convent of Christ, at Thomar. Executed by J. P. Monteiro.
- MONTEIRO, JOSE PEDRO—Producer.
 1252 Panorama of the City of Lisbon.
- GODINHO, MANUEL NUNES, *Lisbon*—Producer.
 1253 Pen-and-ink drawing of China.
 1254 A similar drawing of Her Majesty Donna Maria II.
- 1255—1264 Samples of thread lace, from Vianna Minho.
- MADEIRA, FRANCISCO ADOLPHO, *Penipe*—Producer.
 1265—1276 Samples of thread lace.
- ROZARIO, MARIA DO, *Setubal*—Producer.
 1277 Samples of thread lace.
- CATHARINA, MARIA, *Setubal*—Producer.
 1278 Samples of black lace.
- MARIA, JOANNA, *Setubal*—Producer.
 1279 Samples of black lace.
- PINTO, FRANCISCO XAVIER, *Setubal*—Producer.
 1280 Samples of thread lace.
- THE COUNCIL OF PENEIPE—Producers.
 1281—1293 Various samples of thread lace.
- THE MANUFACTURERS OF BICALHO, *Porto*—Producer.
 1294 Wheel for a rudder.
- RUSSELL, V., *Lisbon*—Producer.
 1295 An artificial orange tree.
 1296 Samples of minerals and dross from the lead mine of Braçal, district of Aveiro.
- SILVA, A. S. P. DA—Producer.
 1297 Genealogical tree of the Royal Family.
 1298 Pen-and-ink drawing: portrait of H. M. Queen Donna Maria II.
- MARQUES, C. I.—Producer.
 1299 A case of artificial flowers.



PROMETHEUS CHAINED, CARVED IN IVORY. M. J. VIERA, PORTUGAL.





THE natural and manufactured products exhibited from this island contribute to form an interesting and instructive group of objects. A series of about forty specimens has been arranged under the divisions—Mineral, Animal, and Vegetable Kingdoms, and Manufactures. These specimens, in addition to the beautiful collection of wax models of flowers and fruits, teach, in a valuable manner, the natural capabilities of the island, both in the soil and in its products.—R. E.

SPECIMENS of the PRODUCTIONS and MANUFACTURES of MADEIRA and WESTERN ISLANDS.

MINERAL KINGDOM.

1. Common opal—Porto Santo. 2. Lignite—Madeira.
3. Lime-stone—Porto Santo.
4. Stalactitic carbonate of lime—Porto Santo.

[Madeira, and the small adjacent island of Porto Santo, are, for the most part, composed of columnar basalt—the cooled lava of volcanoes, now extinct—but there are also some bands of limestone and some siliceous sands. The decomposed volcanic rock yields in many places an admirable soil in the valleys. The limestones are crystalline or stalactitic, and occur in both islands. The sands are chiefly in Porto Santo, and there yield a good building material, but the whole is of very modern date, and part, at least, of the deposits quite recent. The lignite is also a recent deposit.—D. T. A.]

5. Drip-stone of the island of Terceira (one of the Azores islands).

[This stone is highly prized for its properties in filtering water. This kind of stone is not to be found in the other islands forming the Archipelago, and is only to be obtained at one place in the island, from the quarry denominated the "Ribeira da Testa." It possesses a peculiar sonorous tone, when struck with a piece of iron or hard wood.]

Sent over by Mr. John Read, the British Consul at Terceira.

No. VEGETABLE KINGDOM.

5. Wheat, Portuguese name (*Trigo*).
6. Bye (*Centeio*). 7. Barley (*Cevada*).
- 7A. Maize (*Milho*). 8. Beans (*Feijão*).
9. Peas (*Ervilhas*). 10. Castor-oil seed (*Mamona*).
11. Dry currants (*Passas de corintho*).
12. Coffee (*Café*). 13. Tea (*Chá*).
14. Bastard saffron (*Açafrão*).
- 14A. Curcuma longa (*Cacasma*).
15. Sugar and sugar-cane (*Assucar, e canas de assucar*).
16. Arrow-root (*Ararut*).
- 15A. Bunches of dates (*Ramos de tamaras*).
17. Flax (*Linho*). 18. Cotton (*Algodão*).
19. Thread of aloes (*Fio de pita*).
20. Thread and rope of mallows (*Fio e corda de malvas*).
21. Specimens of all the woods in the island (*Amostras de todas as madeiras da Ilha*).
- 21A. Catalogus plantarum medicinalium, vel usu presentium, in Madeira de gentium cultis et notatis, by B. T. Lowe.

21B. Collection of the ferns of Madeira.

ANIMAL KINGDOM.

22. Wax. 23. Honey. 24. Butter.
25. Raw silk (*Seda*).
26. Silk-worm cocoons (*Cazulos de seda*).

27. Tallow, and tallow candles (*Sobo, e velas de sbo*).
- 27A. Wool (*Lã*). 28. Cochineal (*Cochonilha*);

MANUFACTURES.

29. Linen cloth (*Panno de linho*).
30. Linen napkins (*Guardanapos de linho*).
31. Linen lace (*Renda de linho*).
32. Net shawl (*Chaile de meia de renda*).
33. Shawl and other crochet works (*Chaile e obras de crochet*).
34. Broom wicker-work (*Obras de verga de giosta*).
35. Straw plait (*Tranças de palha*).
36. Artificial feather flowers (*Flôres de pennas*).
37. Works in hair (*Obras de cabelo*).
38. Cabinet work (*Obras de marcenaria*):—Two tables (*Mza*). Three work-boxes (*Caixas*). Two book-trays (*Taboleiros*). One chess-board (*Xadrez*). One book-stand (*Estantes*). Twelve paper-knives (*Facas para papel*).
39. A book, as a specimen of printing (*Amostra de imprensa*).
40. Picture frame, made of Madeira til-wood, carved with grapes and vine leaves.

FERRAZ, H., & SISTERS—Manufacturers.

FRUIT:—Wax copies of flowers, of the greater part of the fruits produced on the island, &c.

[The Portuguese names of the fruits, &c., are given with their English and scientific equivalents, where these are certainly known.]

- 1—5. Anona—Custard apple (*Anona muricata*).
6. Custard apple (*Anona chirimolia*).
- 7—11. Pomegranate—Romã (*Punica granatum*).
- 12—14. Maçã reinet—Apple (*Pyrus malus*).
- 15—17. Maçã de Santa Anna—Apple.
- 18—20. Pêro doce—Sweet pear.
- 23 & 24. Maçã bemposta—Apple.
- 25—29. Maçã barra—Apple (*Pyrus malus*).
- 30 & 31. Maçã, cara de dama—Apple (*Pyrus malus*).
32. Maçã, pino d'ouro—Apple.
- 33—35. Pera flamenga—Pear (*Pyrus communis*).
- 36 & 37. Pera Gabaçal . . .
38. Pera d'Ingouxo . . .
39. Pera Ruival . . .
40. Pera Bergamota . . .
41. Pera Francêsa . . .
42. Pera de S. Roque . . .
43. Pera do Monte . . .
44. Pera de S. João . . .
45. Pera Caniça . . .
46. Pecego da Ponta do Sol—Peach (*Amygdalus persica*).
- 47 & 48. Pecego da Calheta—Peach.
49. Figo Banana—Banana (*Musa paradisiaca*).
- 50—52. Goiaba—Goiaba (*Psidium pomiferum*).
53. Pera flamenga—Pear (*Pyrus communis*).
- 54 & 55. Ameixa—Plum (*Prunus domestica*).
- 56 & 57. Pecego calvo—Nectarine (*Amygdalus persica*).
58. Laranja—Orange (*Citrus aurantium*).
59. Laranja d'imbigo—Orange (*Citrus aurantium*).
60. Laranja tangerina—Mandarin orange (*Citrus nobilis*).
- 61—63. Murucujá—Orange (*Passiflora quadrangularis*).
64. Manga—Mango (*Mangifera indica*).
- 65—69. Tabaibo—Prickly pear (*Opuntia*).
70. Castanha—Chestnut (*Castanea vesca*).
71. Pimentão—Capsicum (*Capsicum*).
72. Jambo—Rose apple (*Eugenia jambos*).
73. Bebera—Black fig (*Ficus longa*).
74. Figo—Figs (*Ficus carica*).
75. Maçã vermelha—Apple (*Pyrus malus*).
76. Nóz—Walnut (*Juglans regia*).
77. Limão—Lemon.
78. Limão cidra—Citron (*Limonia*).
79. Cidra—Cyder (*Citria*).



NORTH AREAS, G. H. 44, 45; I. 44; J. 44, 35; NORTH EAST CENTRAL GALLERY, I. 44.

This collection is chiefly remarkable for the abundance of the raw materials and produce it contains. The samples exhibited will, however, at the best, only convey a very imperfect idea of the vast mineral resources of this productive country.

Spain possesses, in many portions of her territory, enormous fields of pit-coal. The most productive and the most celebrated of these occur in the province of the Asturias, and among the interior faces of the mountains themselves. The price of Asturias pit-coal at the port of Gijon (the only point at which it can be shipped) is about 3 reals per quintal of 800 Castilian lbs. each. But at the pit mouth the price is fully one-third less; its cost on the coast being much enhanced by the difficulties of inland carriage. The coke that is manufactured from it, in the open air, fetches three, four, and sometimes as much even as six reals per quintal. The pit-coal raised in the Siera and the Lagrao mines is chiefly exported. The coal dug in Mieres and at Leria is consumed in that country by the furnaces for smelting their iron, steel, &c.

Several companies of Spaniards,—of foreigners,—and of Spaniards and foreigners associated,—have been formed, who devote themselves with great ability, some to the improvement of the methods of mining, others to the construction of common high roads as well as of tramways, for facilitating the carrying of this coal. The Mining Associations of the Valley of Santullan, in the province of Palencia, situate about two leagues from the grand route of Santander, and five leagues from the canal of Castile, are anxiously looking for the execution of those projected lines of railroad that are to connect Alen with Santander, and Madrid with Valladolid, as offering a cheap and enormous outlet for their very abundant supplies. The supplies of coal raised by the *Polentina Leonesa* Company, in a very extensive district, that is peculiarly rich in iron ore—of the province of Leon—will find a most profitable vent by the lines of railway communication now intended to be laid down. These beds of coal are very numerous, and of an average thickness of from two to three metres. The Spanish collection contains a sample of pit-coal from Guadita, in the province of Grenada; another of brown jet; and a third of polished jet from Oviedo. Out of this material small articles are manufactured, which are sold at moderate prices in the Asturias. The collection contains moreover some lignite from Guipuzcoa, which is now being dug near the village of Iquelzoputzuco-Ondos, and it is much used in the mines of that country.

The fields of pit-coal must extend themselves over a much wider area in the direction of the Mediterranean; for at the last Exposition at Madrid there was exhibited a sample of pit-coal from the Adeline Mine, in the province of Valencia, where this coal is worked by a private company. The price—6 reals, or 1 franc and 60 cents. (about 1s. 4½ English) the quintal.

Spain also possesses almost every species of the metals which are the object of industrial labour, as may be ascertained, although but imperfectly, from an examination of the species contained in the Spanish collection. Among many others, gold, incrustated in quartz, has just been discovered in the province of Gerona. There is a specimen of it in the collection.

The various substances coming within the class of Stones and Earths, of which Spain has transmitted specimens to the Great Exhibition,—are but a very inadequate exponent of the riches, of an analogous description, that she really possesses. In this respect the soil of Spain is, undoubtedly, as rich as it is in metallic products; for it offers all that can be desired for giving to various classes of industrial occupation, that make use of them in their processes, the means of an incalculable development and perfection. One cannot take a single step in this boldly-featured region without coming upon enormous masses of marble, serpentine, alabasters, puzzolanos, kaolins, hydraulic chalks, refractory freestone, plastic clays, and very many other primary matters, too numerous for recapitulation here.

There is a tolerably rich collection of marbles, alabasters, clays, and serpentines, from different regions of Spain. In addition to this, a still more comprehensive collection has been transmitted from Madrid, and which

includes 87 specimens of the peculiar series of Cordova, of Grenada, of Almeria, of Leon, of the Asturias, Saragossa, Huelvas, and Guipuscoa.

The Spanish collection contains some specimens of corn from the south, from the centre, and from the north of the Peninsula. On account of their number we cannot notice each variety in this place; but we would strongly recommend the study of these cereals to chemists and agriculturists, who would investigate the contents of the Exhibition. It is probable they will arrive at some interesting results illustrative of the richness of the amygdalaceous principle concentrated in the grains of different Spanish provinces. There are wheats from Seville, the price of which varies from 2 to 45 reals the fanegua. (This measure is extremely variable in Spain; and those who are engaged in the trade of corn would do well to make the customary measures of capacity in use in the several provinces of that country,—and even in one and the same province,—their especial study.) From Malaga there is a variety called *chamorra*, 38 reals the fanegua; and another, distinguished by the epithet "*country*," at 48 reals. M. Pierole, a cultivator, has sent some Indian corn raised by himself, and of which the ear seems to have contained 88 grains.

Spain produces all the vegetable textile matters of temperate climes, a certain number of those produced in hotter countries; and she may, perhaps, be capable of producing many others the use of which has not yet been extensively adopted by her industrial labour. She possesses flax, hemp, cotton, "*esparto*," pine fibre; and she might command, in addition, the hemp of Senegal, the flax of New Zealand, the bananas, the pines, some of the palms of the tropics, as well as various kinds of *malvacots* (M. mallows), *urticas*, &c. which furnish textile fibres. Specimens of various kinds are exhibited. Medicinal plants and drugs have also been sent.

The contrast presented by the Spanish Exposition, between the number, the variety, and the richness respectively of the primary and raw materials of Spain, and her manufactures, exhibits a great void which can be filled up only by her assiduous and sagely calculated labour in that new epoch which is now opening to us. Generously endowed, by Nature, herself,—surrounded by working nations who invite her on all hands to take from them their products, she ought to be prepared to solve the problem whether it will more conduce to her advantage to improve and extend her manufacturing industry, or to restrict her efforts to the perfecting the production of such primary materials, the exchange of which has constituted, up to the present moment, almost the sole basis of her commerce.

The manufactured articles which have been transmitted from Spain to the Great Exhibition convey but an exceedingly incomplete and fallacious notion of the character, the condition, and extent of her industry. There are entire branches—such as glass making, the manufacture of earthenware, porcelain,—the ceramic arts, in short,—together with cutlery, lock making, almost all the industrial processes used in the working of metals; the spinning and winding of cotton; the yarning and twisting of flax, and many others—that are not at all represented in the Spanish collection, or which do appear there by a few isolated specimens only, utterly insufficient to ground any judgment upon. There is not a single specimen of her manufactures of woollen tissues, such as *Tissas de Laines*,—manufactures that are at once indigenous, characteristic, and important. As for woollen cloths, which abound everywhere, and which would well merit the most careful examination on being compared with the fabrics of any other countries, there are but three of the provinces of the Spanish monarchy that have even sent complete series of samples calculated to enable foreigners to appreciate the present condition of her manufactures in this branch. The silk stuffs are so few in number, that were we to form an opinion upon such specimens, we should be led to imagine that these products must be the results merely of some individual and isolated efforts; whereas there exist hundreds of silk mills and works, perfectly organized, in a great many districts of Spain.

To give the reader a comparative notion of the negligence or apathy that must prevail among the industrial classes of Spain, suffice it to say that Catalonia, whose connexion with what we shall call the cotton industry of the country represents a capital in buildings and machinery of 83,000,000 of francs (3,172,612*l.*), with a circulating capital of 7,000,000 of francs (291,667*l.*); and an aggregate amount of 29,000,000 francs (1,208,332*l.*), payable annually on account of salaries and wages; with 93 steam-engines of a total of 4000-horse power, of every description; with 60,000 operatives; 800,000 spindles and brooches (shuttles); 40,000 looms, consuming 23,000,000 of kilogrammes of coal, using up 15,000,000 of kilogrammes of raw cotton, and producing from 16,000,000 of kilogrammes of spun yarn (filature); 110,000,000 of metres (or 119,166,666 yards) of woven stuffs; 16,000,000 of prints ("*d'impressions*");—this Catalonia has not sent a single sample of these numerous products to the Exhibition in London.

At the entrance of the Spanish Gallery there will be seen, detached from the general series of its Exposition, some costly articles of elaborate and remarkable workmanship. These are, arms from the celebrated Royal Manufactory at Toledo, and others, with incrustations in gold and in silver, by M. Zubiago; embroideries on velvet; on *Batiste*; on the *diftis* (or pine-apple fibre cloth) of Manilla; and a robe and a shawl of black lace worked with coloured flowers—a difficult innovation introduced into the art of lace-working by M. Fiter, a skilful manufacturer, of Barcelona.

The manufactures of hemp and flax are but imperfectly represented. There is a good series of specimens from the new factory established at Ferrol, under the name of Isabel II. That factory is established on the economic basis of an hydraulic motive power equal to a 60-horse power.

Other contributions have also been forwarded to this department of the collection from factories at Cervera del Rio Alhama, Valencia, and Grenada.

An excellent collection of samples of cordage, cables, sail-cloths, &c., has been sent from the Arsenal at Carthagena, accompanied by some interesting notes on the relative weights, resistance, elasticity, &c. of the different materials exhibited.

The very fine cloths from the Philippine Islands, although not manufactured from flax, must find a place in this section for want of a more special appropriation. In the note accompanying these specimens as well as various vegetable fibres, it was stated that the latter, of which these cloths are made, are extracted from the *Pita*, which would seem to be a species of *Bromelia*, and from the *Jussi* and the *Bejuco*. From the fibres of this *Bejuco*, hats and other articles are made in the Philippines, of a fineness as peculiar as their strength.

There are but few varieties of the cloths of Spain in this collection; but on examining them in detail we

must do justice to their quality and the moderate scale of their prices. Those cloths, made from Saxony wool, leave little to be desired as to face or appearance, and absolutely nothing as to quality, in respect of strength of texture and fastness of colour.

Segovia has sent some samples of its common cloths; and the manufactory of Renedo, at Santander, a few specimens of the beautiful series it furnished to the Exposition at Madrid.

A few beautiful silk fabrics from the celebrated silk-works at Talavera do not suffice to convey an adequate idea of its products. A more complete series has been forwarded from Valencia, consisting of silk stuffs for curtains and furniture, at 36 reals the vara; "gros" for robes, at the same price; velvets, at 60; other kinds, for cushions, waistcoats, &c. Of ribbons the contributions are very scanty. (Silk) blondes are well represented by the lace of this kind exhibited by M. Margaret and M. Fites, of Barcelona. The first of these lace manufacturers employs 1550 workmen. Robes, mantles, veils, scarfs:—the delicate tissues of this description in the collection leave nothing to be desired. The reputation of these fabrics is established; they are in general demand, both in France and England.

The contributions of Spain in carving, and other works in wood, are but few, yet they are of indisputable interest. The escrutoire, of inlaid woods, the tables of a like description, from eminent cabinet-makers of Madrid, and the table in mosaic from Barcelona, and into the composition of which enter 3,000,000 of separate minute pieces, supply a faithful evidence of the ability and skill of her artists in this kind; but they should have sent, also, the samples of beautiful furniture they produce with all that elegance of form which the taste of the present day demands.

The contents of the Spanish Exposition do not correspond with the condition of the various branches of Spanish industry. In this respect the collection must be considered as deficient in specimens of papers of all kinds, although it possesses a few fine samples. But it will be seen how much more extensive and complete that series should have been, when it is considered that Catalonia alone employs 16,000 persons in the paper manufacture, and produces 700,000 reams annually. Fans and soaps are better represented. The stearic products come from Madrid. One of these last specimens is a white soap, "cold-made," invented by M. Leon et Rica, of Madrid. He affirms that he can prepare, in four-and-twenty hours, a sufficient quantity of this new manufacture to meet any extent of demand that could be made for it. The establishment of M. Canales, at Malaga, contributes specimens of his essence of citron and citric acid.

Among the various productions transmitted from the Spanish colonies must be noted some Havannah cigars of very superior quality. The excellent tobaccos which the island of Cuba contributes to commerce are grown on a belt of territory of no very great extent, adjacent to the western coast of Cuba, and named "Vuelta de Abajo." The soils adapted to the culture of this product, and which are generally the margins of rivers, are so numerous in that part of the island we have just alluded to, and in many other of its localities, that they could furnish excellent tobacco for the supply of the whole world. But some economic obstacles have been opposed, hitherto, to the development of this culture.

The Patriotic Society of Manilla likewise has sent to the collection tobacco leaves of the varieties that are reared in the Bisayan Islands,—the cigars manufactured from which are beginning to be introduced into Spanish consumption.—R. de S.

1 CERAIN (D. JUAN BATTISTA), *Maestu, Alava*—
Manufacturer.

Ore from the Somo-rostro mine.
Calcined ore.
Slag and iron, in different states.

2 THE INSPECTOR OF MINES OF THE DISTRICTS OF
TARRAGONA AND GERONA.

1 Samples of galena, from the Government mines of Falset, province of Tarragona.
2 Auriferous quartz, from the Carolina mine, Culera, province of Gerona.

3 D. A. O., *Guadalajara*.

Silver ore from mines discovered six years ago at Hien-delaencina, Guadalajara.

4 THE INSPECTOR OF MINES OF THE DISTRICT OF
GUIPTZCOA.

1 Iron of first smelting, worked at Orulantequieta, and is found in beds of from 1 to 5 yards in thickness. It is used mixed with three parts of Somorrostro smelting.

2 Iron of first smelting worked at Aldaes Iturry, and found in beds of from 1 to 4 yards in thickness.

3 Galena, from Lordiz, where it is found more or less mixed with sulphuret of zinc in a layer of 2 feet thickness.

4 Blende and Galena, from Vizcoch. These two species of ore are found in great abundance, in a vein of iron-spar, about 1½ yards in width.

5 Lignite, from Iquelzo-putzueo-on-doa. The thickness of the bed is from 2½ to 4 feet.

6 Blende, worked at Miatzegorrieta; it is met with in

great abundance near the surface, in a layer of spar-iron, of 3 yards wide.

7 Galena, worked at Mocorrotz, and found in a vertical vein, of variable thickness; fluor-spar accompanies this ore.

8 Galena, from the two mines situated in Olaquiñeta. Found more or less associated with blende; iron and copper pyrites are also met with, but in small quantity.

9 Ore of Artzorrotz; consisting of galena, with more or less blende, and iron and copper pyrites.

10 Galena, from Lastaolaburo, containing blende in divers proportions, and also copper and iron pyrites, accompanied with fluor-spar and quartz.

11 Calamine, from Astovide.

5 THE DIRECTOR OF THE MINES OF LINARES.

1 Sulphuret of lead, from the Arrayanes mine, known by the commercial name of alquifou.

2 Lead after the first smelting, from the above ore, and employed for founding, not being so pure as the alquifou or potter's ore.

6 THE INSPECTOR OF MINES OF THE DISTRICT OF
LA MANCHA.

1 Micaceous clay slate, from the lower Silurian formation. 2 & 3 *Calymene tristani*, from this formation. 4 Sandstone (*Acenisca*) with *Spirifer trigonalis* and other bivalves from the Devonian formation.

5 Compact Eufotite, in contact with the vein of the Concepcion mine.

6 Virgin quicksilver from the Valdeazogues mine; 7, from the Concepcion mine; and 8, from the inter-vein.

9 Iron pyrites combined with the virgin quicksilver of the Concepcion mine.

10 Crystallized cinnabar and virgin quicksilver, from the same mine.

[The soil of Spain contains mercury in many districts of its territory, and various specimens of this mineral have been forwarded to the Exhibition. These have been drawn from the celebrated mines of Almaden, of the Asturias, and of Almeria, on the Andalusian side. The Almaden series would have been very instructive had the specimens been sufficiently large. They exhibit mercury, under the several conditions in which it is found, as well as the earthy substances and fossils that occur in the same formations which contain it; the latter being generally rock—the upper, of Silurian series. We meet with the *Calimena trisulcata*, and the *Spirifer trigonalis*, and other bivalve shells of the *Tertiary Devonian* formation. Mercury is found in its native state, and in combination with sulphur. There are some samples of crystallized cinnabar; of brown freestone, impregnated with cinnabar of corned mercury (*M. corne*), to the number of twenty-six specimens, exceedingly interesting as enlarging our geological knowledge of the region of mercury in Spain. Within these few years, several mines of cinnabar have been opened and worked in the Asturias. The mineral beds of Tijola and of Bayargue, in the province of Almeria, have not, as yet, been properly examined.]

11 Crystallized barytes, with virgin quicksilver, from the same mine.

12 Calcareous-spar, from the same mine.

13 Slaty cinnabar, from the Valdeazouquel mine.

14 Sandstone, impregnated with cinnabar, from the same mine.

15 Ore of quicksilver (called *Corneo*); and 16, similar ore (called *Piedra frailesca*) from the Entrichedo mine.

17 Quartzite, with portions of cinnabar, from the Almaden mines; 18, Quartzite from the upper Silurian rock, which forms the vein of the mine.

19 Arenisca oscura, dark sandstone (called *Solera*), varied with cinnabar and globules of quicksilver, from the San Francisco mine; 20, a specimen more penetrated, with the crystallization of the cinnabar a little distinct, from the San Diego; 21, a specimen of still richer quality, from the San Pedro; and 22, another with the crystals very distinct.

23 Cinnabar, or upper ore, from the San Nicolas.

24 Plate of cinnabar, worked and polished, from the same.

25 Slate, with sliding surface, from the pendent of the San Pedro.

26 Breccia, or *Piedra frailesca*, with crystals of lime-spar, with joints of cinnabar.

27 Native quicksilver, from the San Pedro.

28 Artificial sublimate. 29, Vermilion.

30 Scorize, from the upper ore; and 31, from the *Solera*, or *China*.

32 Goniatites and some other fossils, from the Devonian formation.

The proportion of quicksilver produced from the ores of the Almaden mines amounts to 75 per cent.; supposing the furnaces to be charged in the usual proportions with superior *Solera Pobre*, *China*, and *Bolas de Vacisco*.

[The celebrated and long-known mines of Almaden, which furnish annually upwards of 1,000 tons of mercury, are worked in veins of very considerable thickness, occurring in the paleozoic rocks of La Mancha. Notwithstanding the active operations carried on in these mines for many centuries, the depth is still not exceeding 150 fathoms; but the principal vein has a thickness of from 30 to 50 feet, and the magnitude is still more considerable where the veins intersect. The mines yield native mer-

cury and the sulphuret: the latter (cinnabar) containing, when pure, 85 per cent. of metal. The veins extend for a considerable distance, running east and west from Almaden.—D. T. A.]

7 The INSPECTOR of MINES of the DISTRICT of MURCIA.

1 Argentiferous galena, in contact with sulphuret of zinc, from the mine of San José in Mazarron, containing 14 per cent. of lead, and 2 oz. of silver per 100 lbs.

2 Sulphuret of zinc, in contact with iron pyrites, from the same mine.

3 Argentiferous galena, in contact with sulphuret of zinc, from the Josefa mine; it contains 12 per cent. of lead and 2 oz. of silver per 100 lbs.

4 Argentiferous galena, in contact with sulphuret of zinc and iron pyrites; from the same mine, with blende and clay predominating.

5 Argentiferous galena, in contact with iron pyrites. In this specimen the galena appears in a confused crystalline form, having abandoned the blende with which it is usually united, and associated with iron pyrites; it contains 29 per cent. of lead and 2.56 oz. of silver per 100 lbs.

6 Iron pyrites, in contact with argentiferous galena, from the Bilbao mines. In this specimen the pyrites appear in a foliaceous form, alternating with very thin layers of argentiferous galena.

7 Iron pyrites, in contact with argentiferous galena. In this specimen the galena predominates in broader plates.

8 Iron pyrites, in contact with argentiferous galena. In this specimen the pyrites appear traversing the clay-schist, which is the rock in which the metallic layer is enclosed; the galena is sprinkled with some particles of copper pyrites.

9 Argentiferous galena, in contact with iron and copper pyrites. In this specimen the galena forms the principal mass; it effects an irregular crystallization, appears pierced in various ways by pyrites, and preserves the clayey matter in which it is found embedded.

10 Argentiferous galena. In this specimen the galena is nearly divested of impurities, having a tendency to form bands.

11 Argentiferous galena, from the Porvenir mine. In this specimen the same tendency is seen; and a group of crystals of large size, sprinkled with iron pyrites, is found in some parts of the mass.

12 Argentiferous galena, from the same mine. The plates which form the mass of this specimen are closely united. Some particles of pyrites of iron and copper are found in it.

13 Argentiferous galena, crystallized, from the Alianza mine. The galena here appears of a cubical form, accompanied by blende and iron pyrites.

14 Argentiferous galena, from the same mine. Similar to the preceding, but not so pure.

15 Argentiferous galena, granular, from the Española mine. It appears in contact with the carbonated ores, forming isolated nodules.

16 Argentiferous galena, in contact with the carbonate of lead, from the same mine. The mutual contact of both substances in this specimen is clearly seen.

17 Argentiferous galena, from the same mine. The same as the former, but with the carbonate of lead predominating in a greater degree.

18 Platy galena, disseminated in a clayey mass, from the Santana mine; quartz constitutes a part of the matrix.

19 Carbonate of lead in contact with iron, from the Española mine. This species which is worked together with others.

20 A variety of

21 Nodules of

united by a

This ore is

layers of

22 No

- iron-clay, from the same mine. It is one of the species which is found in the Sierra of Cartagena; the matrix is clayey, and serves as a cement to the grains of carbonate of lead.
- 23 Carbonate of lead in a mass of quartz, from the Afortunado mine. In this specimen the latter is so intimately united with the carbonate, that it appears to be an homogeneous mass.
- 24 Crystals of carbonate of lead, united by a clay-iron cement, from the Rafaela mine.
- 25 Crystals of carbonate of lead, from the Relampago mine, so intimately united as to form an homogeneous mass.
- 26 Crystals of carbonate of lead, from the same mine. The carbonate in this specimen forms bands of different colours.
- 27 Crystals of carbonate of lead, from the same mine. A confused crystallization in capillary needles.
- 28 Crystals of carbonate of lead, from the Sol mine. In this specimen the confused grouping occurs in lengthened, isolated, and irregularly united crystals.
- 29 Crystals of carbonate of lead, from the Relampago mine, in flat and long prisms, covered with arsenio-phosphate of lead.
- 30 Crystals of carbonate of lead, from the same mine, but with the crystals more clearly seen.
- 31 Arsenio-phosphate of lead, from the same mine, in hexagonal prisms, with crystals of carbonate.
- 32 Arsenio-sulphuret and arsenio-phosphate of lead, from the same mine.
- 33 Specimen of the same, with the band of arsenio-sulphuret more distinct.
- 34 Crystallized arsenio-phosphate, from the same mine, composed of quartz and crystals of arsenio-phosphate and carbonate of lead.
- 35 Carbonate of lead, imbedded in a mass of iron-clay, from the Eloisa mine. This is the most usual form in which it appears in the district, and though the produce is only 8 per cent., the ease with which it is smelted, and its abundance, render it valuable.
- 36 Carbonate of lead, with quartzose matrix, from the Enrique mine.
- 37 Carbonate of lead, mixed with brown iron, from the same mine.
- 38 Carbonate of lead, from the Eloisa mine, with mixture of sulphate and small grains of quartz in the brown iron.
- 39 Carbonate of lead. Another specimen of the same.
- 40 Carbonate of lead, in crystals, united by an iron-clay cement, from the Rafaela mine.
- 41 Carbonate of lead, in crystals, from the Serrano mine. In this the crystals are only slightly adherent.
- 42 Carbonate of lead, mixed with the ferro-hydrate, from the same mine.
- 43 Carbonate of lead, in powder, in a mass of iron-clay, from the Sobresaliente mine; valued for its ready fusion.
- 44 Carbonate of lead, from the San Antonio, similar to the preceding, but having greater compactness of the matrix.
- 45 Carbonate of lead, earthy, with mixture of iron, from the Rafaela mine.
- 46 Carbonate of lead, crystallized, mixed with ferro-hydrate, from the Inglesa mine.
- 47 Carbonate of lead, in crystals of quartz, from the Enrique mine. The carbonate in this specimen is in a mass, and the crystals of quartz are in groups.
- 48 Carbonate of lead, with quartz, from the same mine, having more lead than the preceding.
- 49 Carbonate of lead, crossed by a band of sulphate, from the Rafaela mine. The black band which forms the nucleus of the mass is the sulphate, derived from the decomposition of the galena.
- 50 Sulphate of lead, in a mass, with ferro-hydrate, from the Mosqueteros mine.
- 51 Sulphate of lead, from the Dolores mine. Like the preceding, but more compact, and accompanied with quartz.
- 52 Sulphate of lead, massive, from the Relampago mine.
- 53 Carbonate and sulphate of lead, with ferro-hydrate, from the Rafaela mine.
- 54 Sulphate of lead, massive, with ferro-hydrate, from the Relampago mine.
- 55 Sulphate of lead, massive, from the same mine, of finer grain than the preceding.
- 56 Mass composed of crystalline grains of sulphate of lead, in contact or covered with ferro-hydrate.
- 57 Sulphate of lead, crossing a mass of carbonate. A variety of the preceding.
- 58-60 Aluminous schist, from the Perules quarry.
- 61 Ancient lead slag.
- [Spain, under the Romans, possessed most extensive mines, and mining and metallurgical processes were considerably advanced. Pliny describes many of these; and from the statements made by that author, and others, it is probable that the mines of Spain yielded nearly all the silver, lead, and copper to the Roman empire. The enormous heaps of slag, known as Roman scoria, the refuse of their works, still contain a sufficient quantity of silver to pay for working them. In England, similar accumulations—in The Mendips (originally called The Myne deeps), and in Derbyshire—are now smelted, for the silver they contain.—R. H.]
- 62 Ancient lead slag, belonging to a more remote period than the preceding.
- 63 Roman litharge; commonly found in lumps by the side of the ancient slag. This specimen contains 51 per cent. of lead, without the slightest trace of silver, a circumstance which appears to prove that the art of extracting minerals was known amongst the ancients.
- 64 Garvillo de rambla. Small rounded pieces of carbonate or phosphate of lead, washed down by the mountain torrents.
- 65 Gandinga de rambla; smaller particles of the same. The specimen exhibited has been produced by washing.
- 66 Ancient slag, similar to No. 61 (called, from its flattened form, *Tejillo*).
- 67 Ancient slag, similar to the preceding (called *menuda*, from its smaller size).
- 68 Gandinga de escoria; produced from washings or residuum of the slag (called *No tiene mas*).
- 69 Gandinga de escoria. The minute particles which escaped the former processes, on being submitted to a washing, produced this specimen.
- 70 Gandinga de escoria. Similar to No. 68, but larger.
- 71 Almagre, or almazarron, red lead. Residue from the preparation of alum.
- 72 Crystallized alum, from the aluminous schists Nos. 58, 59, and 60.
- 73 Crystallized alum. Like the preceding, but of a better quality.
- 74 Crystals of lead, obtained by Pattinson's method.
- [The introduction of Pattinson's process of desilvering lead, into Spain, has been very important to the mineral interests of that country, as now they are enabled to work lead ores containing a small per centage of silver, which did not pay for extracting by any other method. The process consists in keeping the metal just in a fluid state; the lead crystallizes out as pure lead, leaving a portion behind excessively rich in silver, from which the lead is removed by the oxidizing process, in a reverberatory furnace.—R. H.]
- 75 Lead, from the smelting of the Gandingas de escoria; specimen No. 68.
- 76 Lead, produced from the union of carbonates of lead with slag, Nos. 66, 67, and 69.
- 77 Lead, from the melting pots of Pattinson.
- 78 Lead, from the ancient slag, similar to Nos. 62 and 70.
- 79 Lead, from the mixture of argentiferous ores of the Sierra Almagrera with those of the district.

- 80 Lead, from litharge, made by the English process.
 81 Lead, hard, before crystallization. It is reduced in reverberatory furnaces.
 82 Lead, soft. The latest produce of the crystallization.
 83 Lead, prepared to the English process.
 84 Stalactitic iron, with crystals of carbonate of lead.

8 The DIRECTOR of MINES of RIO TINTO, *Huelva*.

- 1 Grey copper, from the Preciosa mine, which contains 22 per cent. of copper, and 0.125 per cent. of silver.
 2 Raw mineral ore, proceeding from the vein of double sulphuret of iron and copper. This ore, which produces an average of five per cent. of copper, appears in a mass of irregular form and of large dimensions.
 3 Ore prepared by slow roasting, exposed to the open air in piles, and worked by the damping process.
 [This process consists in stratifying the sulphur ores with carbonaceous matter, and setting fire to the pile; the whole undergoes a slow combustion. Both the sulphur and the copper absorb oxygen from the atmosphere in the process, and sulphate of copper is formed; this is washed out by water in the damping process, and iron is then employed to precipitate the copper. This precipitation of copper by iron is an example of substitution: a particle of iron is converted into sulphate of iron, and dissolved, for every grain of copper deposited.—R. H.]
 4 Bar of forged iron, covered with a case of copper precipitated from the waters of the Rio Tinto; which, traversing excavations made at different epochs, some very remote, carry sulphate of copper in solution.
 5 Bar of cast iron, covered with a casing of copper precipitated, by the action of the iron, from the waters charged with sulphates of iron and copper.
 6 Bar (*Toral*) of fine copper, produced from the refining of the casing of the class No. 4, performed in a reverberatory furnace.
 7 Cake (*Roseta*) of fine copper, resulting from the refining in crucibles of the scales, or copclas, of No. 5.

9 The INSPECTOR of MINES of SANTANDER.

- Copper pyrites, from the Constanca mine, town of Camaleno, district of Petes: the ore produces 20 per cent. of copper.
 [Under this head may, first, be noticed the ores from the mineral beds of Huelva, the mines of which have been almost always worked by the government. The average richness of the grey copper, which is a mixture of the two pyrites of iron and copper, is above 5 per cent. of this latter metal. There are also the ores of the "Preciosa" mine, which are of a sulphuro-arseniated antimonium, compounded with iron, silver, copper, &c. This deposit is found to consist of an irregular sort of vein, of about 40 centimetres (or 13 inches) in breadth. It contains 20 per cent. of copper and $\frac{1}{13}$ of silver. Its price, at the surface of the mine, is about 15 francs the quintal. The mine of copper pyrites in the province of Seville, near the village of Castello de las Guardas, is very considerable. It is, in fact, a vein of metal of from 12 to 13 metres (39 to 42 feet) in thickness, with a breadth of 336 metres (1092 feet), and a depth of 35 metres (114 feet). The mineral is mixed with quartz, in the proportion of $3\frac{1}{2}$ per cent. of the former, $5\frac{1}{2}$ per cent. of the latter, and the residue is iron. They obtain, at these works, from 200 to 225 quintals of pure iron per month.
 Sulphur of copper is procured also at Grenada, in the Sierra Nevada, in the Asturias, at Santander, &c.
 The blue and green carbonates of copper abound, exceedingly, at Velez Rubio, at Bayargue, and at Torre, in the province of Almeria. Mining is very irregularly con-

ducted in this country. Some speculations of this nature, however, are in progress of organization, and others already begin to yield returns.

The mines of argentiferous coppers of Saragossa, that are now wrought, yield from 11 to 15 per cent. of copper, and 8 ounces of silver, for every quintal of ore. There are mines of this sort at Calcena and at Biel; but this last does not contain silver, any more than the mineral ore of Foxburne, which yields 18 per cent. of iron, however, and sells for 1 franc 35 centimes the quintal.

Carbonated copper is found, moreover, in the Asturias, in the mine called the "Miracle," in the commune of Ovis. All this ore is exported to foreign countries, at the rate of about 5 francs the quintal. The sulphuretted leads of Santander, from the mine of Constanca, near the village of Cameleño, are found in veins of about a foot in thickness; and they give about 12 per cent. in metal. These workings have been commenced with some chances of success, for the country abounds both in building-timber and in woods adapted for conversion into charcoal.

The coppers procured from all these ores, particularly those of Rio Tinto, of Seville, and of Almaden (specimens of which are deposited in the Exhibition), are of excellent quality. Various bars of iron (which are also in this collection), covered with an incrustation of copper, will illustrate the usual method employed—whether for waters that are naturally saturated with sulphate of copper, or for the transmutation of copper and iron ores (minerals) into double sulphates. The metal precipitates itself, and the incrustation of copper is smelted and refined in reverberating furnaces. Other ores or minerals that differ in their properties from sulphurs are treated by fusion—preceded, where such process becomes necessary, by roasting. The pure coppers from Rio Tinto that are deposited in the Exhibition, realize a price of about 95 reals the arroba of $12\frac{1}{2}$ kilogrammes; that of Seville, about 90 reals. It is from this last-named kind that they make "lateen" or brass capsules, and metal plates, in the factory of San Juan de Alcarres (which has not sent any sample of its products, on this occasion, to London). A certain quantity of them is forwarded to Catalonia. The copper of Rio Tinto is chiefly employed in perfecting the copper coinage of Spain (already too extensive), and in meeting the demands of the Spanish marine.]

- 10 The MARTE MINING COMPANY, *Losacio, Zamora*,
 Ore and regulus of antimony.
 Specimens of silver, lead, and other minerals.

11 The INSPECTOR of MINES of SARAGOSSA.

- 1 Argentiferous galena, from the San Vicente mine district of Fombuena: lead, 28 per cent.; silver, 2 oz.—per quintal of 100 lbs. Spanish.
 2 Ore of copper, from the Imperial mine, in the same district.
 3 Argentiferous galena, from the Desgraciada mine, district of Ateca: lead, 22 per cent.; silver, 3 oz.—per 100 lbs. of mineral.
 4 Antimony, from the Paraiso mine, in the same district.
 5 Antimonial galena, from the mine of Na. Senora de los Dolores, in the same district: lead, 18 per cent., per 100 lbs. Spanish; antimony, 12 per cent.; silver, $1\frac{1}{2}$ oz.—per 100 lbs. Spanish.
 6 Sulphuret of lead and antimony, from the Ascension mine, district of Nombrega: lead, 22 per cent.; antimony, 8 per cent.; silver, 2 oz.—per 100 lbs. Spanish.
 7 Copper, from the Maria mine, district of Biel.
 8 Argentiferous copper, from the Mensula mine, district

of Calcera: copper, 11 per cent.; silver, 8 oz.—per (quintal) 100 lbs. Spanish of mineral.

[The mineral ores of lead and zinc of the Sierra de Gador, near Guadix, have been worked solely for the sake of the lead which they contain, in the proportion of 15 per cent.; but it is now proposed to extract the zinc also, which is more abundant than the lead, particularly in the mine of Leon de Plats.

The whole coast of Andalusia is rich in galenas; the province of Malaga yields this product mixed with pyritic iron and hydroxidated iron, at Mijar. This mineral, which is fused in large Spanish reverberating furnaces, sells for about a franc per quintal. In the Sierra de Narje, in the same province, galena is found in beds, and in masses, occurring in crystallized chinks. By fusion, it yields 40 per cent. of lead, of excellent quality. The territory of Morbella, which furnishes superior ores of magnetic iron, contains also a rich deposit of argentiferous galena, of nearly 50 metres (more than 160 feet) of ascertained thickness, in a transition formation. It gives 46 per cent. of lead and 2 ounces of silver per quintal. This ore is sold at 5 francs the quintal.

Linares contains a considerable deposit of lead, in the form of sulphuric earths, known in commerce under the name of *alechol*. It is sold in this state to the potteries of the country, for about 8 francs per quintal; and the metal, obtained by fusion, for 13 francs. Mixed ores, equal to those of Gador and Almagrera, above mentioned, are of frequent occurrence in Murcia—a province abounding in lead of several kinds, yielding silver in various proportions.

The mine of *Parvenir* yields sulphuretted leads, in contact with iron and pyritic copper. The ore, when separated from the rock, is found to contain 60 per cent. of lead, and 2.58 ounces of silver per quintal. There are some crystallized galenas, combined with blende and with pyrites, which yield no more than 14 per cent. of lead, and yet are worked at a profit, on account of their containing silver in the proportion of 2 ounces to the quintal. Carbonated leads are as abundant in this province of Murcia as the sulphuretted leads. They yield 25 per cent. of lead and 1 ounce of silver, or 37 per cent. of lead and 1.37 of silver.

In the collection there are galenas from the province of Saragossa, equally rich in silver. The sulphuretted lead is sometimes found combined with antimony. The proportion, in ores that have been brought from the Ascension mine, at Munebrega, are—22 per cent. of lead, 8 per cent. of antimony, and 2 ounces of silver per quintal.

In Catalonia there are numerous beds of sulphur of lead. The mines of Falset, near the village of Belimum, in the province of Tarragona, have been worked from a period of remote antiquity. According to the metallurgic richness of the veins from whence they are extracted, these ores sell at 38 or 40 reals the quintal. At Guipuzcoa, in the Basque provinces, we meet with galena mingled with blende. At Lordia (canton of Berastegni), this mineral is found superposed on spathic iron about 3 feet 3 inches in depth, in a bed of the average thickness of 2 feet, and in considerable blocks or masses. Another and neighbouring locality, at Vizcoch, yields a similar mineral, as may be seen in the collection; and this ore it is proposed to dig for. When blende, in formations of this kind, becomes very predominant, as happens at Miatzegorrieta, the mine is worked with a view to the yield of zinc only. Galenas are found in the same province, but nearer to the frontiers

of France, at Mocosorroto, Olaquineta, Alzarrote, Lastanburne, &c.

The carbonated and phosphated leads of the province of Zamora contain, also, sulphur of lead and antimony, with a small admixture of silver, in the proportion of $\frac{1}{10}$. Lead enters into this admixture in the proportion of 42 per cent., and the veins are about 1 foot thick. The fusion is difficult, on account of the antimony and the arsenic that are combined in this ore. The Asturias are rich, likewise, in common and in argentiferous galenas. The association called "Union Asturiacha" works the second kind only. The common varieties, although extremely rich (seeing that some of these ores, such as that of the Cangas de Tineo, contain 70 per cent. of lead), are not at present the objects of mining adventure or operations. In the interior of the peninsular, in the province of Salamanca, there are veins of sulphuretted and carbonated lead; but neither of these has yet induced the undertaking of any extensive workings. It is only in the potteries of the country that a small portion of the sulphur, which is sold for 50 reals the quintal, is consumed. The smelted leads that are prepared in Murcia contain, generally, some silver, and this is separated by cupellation. The quantity varies from half an ounce to as much as 8 ounces per quintal of this metal. There are other kinds, derived from ancient scoriae and litharge, which do not contain more than 5 ounces of silver per ton. In the "*Pattinson* cauldrons" as they are called, they have introduced the method of crystallization. Leads which do not contain more than 30 ounces of silver per ton are concentrated till they yield 154 ounces. The last result of the continued crystallizing process gives leads with only half an ounce of silver per ton. The leads elaborated in the foundry of Adra come from the Sierra de Gador. The silver obtained from the furnaces of Almeria (the galenas of which fetch 240 reals the quintal), is exported almost entirely to foreign markets. A great proportion of it subsequently returns in the shape of money, such as five-franc pieces, upon which the usual exchange in Spain (namely, a value of 19 reals) secures a sure and ready profit.

The variety and richness of the ores of lead which are diffused through the soil of Spain are really astonishing. There is scarcely a single province of the monarchy in which they are not to be found in greater or less abundance; whether the ore contain simply lead and sulphur, or be in combination with antimony, iron, or zinc, or, still more especially, with silver—as in many varieties of galena that are excessively rich in this last metal.

The galenas of Almeria, of the celebrated Sierras of Gador and of Almagrera, are almost entirely of silver. They are sold in their rough state at from 40 to 240 reals the quintal. There are some—those of Padules, for example—in which sulphur is mixed with carbonate, and there is no silver. These sell for about 5 francs the quintal. The lead extracted realizes about 55 reals. But there are galenas, on the other hand, which contain sometimes a pound of silver per quintal, and which are sold at a much higher price. The large mass that is to be seen at the Exhibition comes from the rich vein of Juroso, in the Sierra d'Almagrera, and it contains, upon an average, 13 ounces of silver per quintal, and 43 per cent. of lead.]

12 THE FACTORY OF S. PEDRO DE ARAYA, Alara.

1 and 2, Specimens of sparry-iron, from the Sierra de Arlaban; found in a vein four yards thick, easily worked.
3, The same ore calcined.

4 and 5, Red hematite, from the same Sierra, in rounded pieces and nobs.

6 Fire sandstone, from the vicinity of Araya.

7 Castinas, from the same place.

8 Coal, from Asturias.

9 Charcoal, made from the wood of the beech.

10 Grey furnace-scoria; 11, clear grey; and 12, that called *blanca atruchada*.

13 Scorias from the upper furnace.

14 Iron, raw; 15, refined; 16, drawn; 17, and completely refined.

13 The INSPECTOR of MINES of the DISTRICT of ALMERIA.

1 Argentiferous galena, from Sierra Almagrera—the greater portion exported to France.

2 Silver, refined at Cuevas, in the Soler Factory; accompanied by samples of the argentiferous galena, from which it is produced; and others of lead of different qualities—the inferior kind is principally exported.

3 Silver, from the Carmen Mine, in the Sierra Almagrera.

4 Galena, from the Sierra de Gador. The variety called "Metal acerado," is the richest in lead of the best quality.

5 Galena, from the same Sierra. This variety is called "Metal de hoja," the most valuable of the produce of the Sierra and much exported.

6 Galena, from Padules, a mine newly opened.

7 Galena, from the Sierra de Gador. The variety called "Metal de luz," is also rich in lead of the best quality.

8 Galena, from a newly opened mine in Padules, Sierra de Gador, and principally exported.

9 Galena (*de hoja*), or leafy, with blende and sulphuret of iron. The mines are not worked in consequence of the difficulty of reduction.

10 Galena, from Carboneras. A vein which has only recently been commenced working.

11 Carbonate of lead from Padules. Very abundant, and chiefly exported.

12 Lead of best quality, which is nearly all exported.

13 Lead of best quality, obtained from the ores of the Sierra de Gador, and principally exported.

14 Sulphuret of mercury, from Tijola.

15 Sulphuret of mercury, from Bayarque. These veins are not worked at present.

16 Quicksilver, obtained from the preceding ores.

17 Blue and green carbonate of copper, from Velez Rubio. Not now in operation.

18 Carbonate and oxide of copper, from Bayarque.

19 Argentiferous, grey, or carbonate of copper, from Velez Rubio.

20 Copper, refined in the Factory of San Miguel, district of Benahadus.

21 Grey copper, worked in the district of Turre.

22 Micaceous iron, with hydroxide, from Bacares.

23 Iron, of great softness, obtained at a factory in Bacares; smelted in a Catalonian furnace, by using oak and other charcoal, and principally consumed in the immediate neighbourhood.

24 Soft iron, from Ohanes, obtained from the iron-clay worked in the town of Beires, which produces, in a Catalonian furnace, twenty-four arrobas of twenty-five pounds each, per day.

25 Potash, made in the district of Maria. This is the produce of the first washings of the ashes, it is afterwards calcined and refined, and is entirely consumed in the peninsula.

26 Potash, calcined, produced from the vegetable ashes in the same district.

27 Nitrate of potash, from a factory in the district of Cuevas, obtained from the organic detritus gathered in much frequented roads and other places; it is entirely consumed in the country.

28 Kaolin, from Nijar. Found in great abundance, and used at the earthenware factory of Seville.

29 Puzzolana, from Nijar, the soapstone of Somontin. It is very abundant, and supplies some textile factories in Catalonia.

30 Fire-clay, from Sorbas. At present solely employed in the manufacture of earthenware, but it might be used in the making of good fire-bricks and crucibles; it only requires a due admixture to counteract the effect of the oxide of iron which it contains.

31 Thirteen samples of sheet lead, made by cylinders, from a quarter of an inch to one thirty-fourth part of an inch thick, and from six and a half to seven feet wide; made of lead produced from the ores of the Sierra de Gador, for home consumption and exportation.

32 Lead in tubes, obtained from the works of the Sierra de Gador.

33 Samples of white-lead, manufactured from the lead of the Sierra de Gador.

34 Samples of white-lead, prepared with oil, for painting.

35 Roquetas salt.

36 Breccia-form marble from Almeria.

37 White marble from Macael. This and the grey marbles are abundant. It is used for baths, chimney-pieces, consoles, and other articles; and the finer grained for sculpture.

38 Grey marble, from Macael. Found in abundance.

39 Marble, from Dalias. Abundant.

40 Black marble, from Dalias. Abundant.

14 THE LINARES LEAD MINING ASSOCIATION, Offices in London, 2 New Broad Street—Proprietors.

Four specimens of lead ore from the mine of Pozo Ancho at Linares, in the province of Jaen, Spain.

[The Linares mines were worked half a century since, and abandoned; but, since the processes now employed for desilverizing lead have been introduced into Spain, these, and many other lead and silver mines have been put into active operation.—R. H.]

15 The INSPECTOR of MINES of the DISTRICT of ASTURIAS, Oviedo—Producers.

1 Blue carbonate of copper, from the Milagro mine; found in lumps of different sizes, and all exported.

2 Green carbonate of copper, from Mieres.

3 Cinnabar, from Mieres; 4, from the Deseada mine; 5, from the Considerada mine; and 6, from the Paillet mine. This ore is of good quality, and is found in lumps of different sizes. The whole of the quicksilver produced at these mines is sold to the Government.

7 Sulphuret of lead from the Trapisonda mine; and 8, from the Conde de Toreno mine. These ores contain seventy per cent. of lead.

9 Calamine, from the Casualidad mine;

10 Peroxide of iron, from Castañedo del Monte;

11 Ferruginous sand, from San Andres;

12 Peroxide of iron, from the district of Bayo;

13 Hydroxide of iron, from San Claudio.

At the above works, the mineral is found from three-fourths of a yard to one yard in thickness, and is used at the Royal Manufactory of Trubia for cannon and machine casts.

14 Red oxide of iron, from the district of Colunga.

15 Hematite, from Mount Aranio.

16 Oligiste of iron, from Mount Aranio.

17 Quicksilver, from the distillations made by the Anglo-Asturian Company, at their works in the district of Mieres.

18 Quicksilver, from the distillations made by the Union-Asturian Company, at their works in the same district.

19 Coal, from the mines of D. Leon Lillo, district of Sama de Langreo; 20, from the Leonesa-Asturian Company, district of Pola de Lena; 21, from the Anglo-Asturian Company, district of Muros; and 22, from the Investigadora Company, district of Siero. Generally found in veins of half a yard in thickness.

23 Coke, from the mines of the Duke of Rianzares in the district of Langreo.

24 Black marble, veined with spar, from Hevia, district of Siero.

25 Breccia marble, from Latores, district of Oviedo.

26 Red marble, from Navanco, district of Oviedo.

27 Red marble, veined with spar, from S. Julian de los Prados, same district.

28 White marble from Lozana, district of Piona.

16 The INSPECTOR of MINES of GRANADA.

1 Tortoiseshell marbles, with whitish veins; from the district of Alfacar.

2 Ash-coloured marble, with yellowish veins; from the district of the town of Montefrio.

3 Reddish-grey marble; from the Sierra Elvira. Useful for monumental architecture, and capable of high polish.

4 Red marble, with yellow, green, and white veins; from the district of Valle de Luque.

5 White marble; from the district of La Peza.

6 Red marble, with darker veins of the same colour; from Alora.

7 Dark-grey marble, with white veins; from Pinos-Puente (Sierra Elvira).

8 Black marble, with white veins; from Sierra Nevada.

9 Dark-grey marble; from Cacin.

10 White marble, with blue veins; from Loja. Scarce and of good quality.

11 Marble, with blue and yellow veins; from Alora.

12 Ash-coloured marble, with dark veins; from La Peza.

13 Jasper marble, dark or brown, with a white vein; from the Sierra Elvira.

14 Chestnut-coloured marble, with white veins; from Lanjaron. Scarce and valuable.

15 Chestnut and white marbles, from Lanjaron.

16 Grey marble, with white veins; from Sierra Elvira.

17 Serpentine; from Huejar Sierra. The quarry known from a remote epoch.

18 Cobalt ore; from the Leon de Oro mine, in the Sierra de Baza.

19 Oxide of cobalt; from Albuñuelas, where it is found in the greatest abundance.

[The specimens of this mineral substance that are deposited in the Exhibition come from the Sierra de Baza (province of Grenada), where the workings have been very lately established; and from Albuñuelas, in the same province, in its state of an oxide; but the mining operations for this latter have met with an accidental interruption. We have heard of other works that exist in Upper Arragon, near the Pyrenees, and in the kingdom of Valencia, but of these the Exhibition possesses no specimen.]

20 Ore of sulphuret of copper; from the Rafaela mine in the Sierra Nevada, district of Huejar Sierra.

21 Specimens of ores of lead and zinc; from the Sierra de Gor, near Guadix, and found in very irregular deposits imbedded in the transition limestone, similar to that of the Sierra de Gador.

22 Sulphate of magnesia; from Cullar de Baza, where it is produced by the natural evaporation of a considerable spring situated in that district.

23 Auriferous sands, from the Barranco de Donna Juana, proceeding from the deposits made on plateaus interposed in the washings.

[There is reason to suppose that many very important deposits of metalliferous ore, besides the numerous and valuable quarries of marble, might very easily be worked in the south of Spain, and especially in the palaeozoic and secondary rocks of Granada.

Gold has hitherto been discovered in but three districts of country, and these widely separated from one another—in Grenada, in the ravine of Doña Juana, among

sands which are dug for the purpose of the lead-washings established there. The companies which have been associated here entertain sanguine hopes of the gold production of a country whose ancient renown for its grains of gold, wafted to and fro by the waters of the river Dera, has been so favourite a theme with our southern poets.

Some companies have likewise been formed for the purpose of digging the soil and working the auriferous sands that are frequent in the province of Leon, near the Galician frontier. In these localities grains of gold, tolerably large, are sometimes met with; but, generally speaking, these thin spangles of the metal (*paillettes*) are so imperceptible that they can scarcely be separated by mere washing. They are generally removed with the earth of sand which contains them. Gold, incrustated in quartz, has just been discovered in the province of Gerona. There is a specimen of it in the collection.]

17 The INSPECTOR of MINES of the DISTRICT of LEON.

1 Hydrous oxide of iron; this occurs in layers of 1-15 yards thick, which alternate with others of clay. From the district of Yugueros, corporation of La Ercina.

2 Peroxide of iron; from the district of Argoleja, corporation of Villayandre, found in veins of half a yard thick.

3 Hydrous oxide of iron; from the Saclites district, corporation of Cistierna, found in bunches.

4 Ferruginous chalk-stone; from the Colle district, corporation of Bonar, found in continuous layers of $\frac{1}{2}$ yard thick.

5 Iron-clay, from Saclites, corporation of Cistierna, found in layers of great thickness, enveloping the bunches of hydroxide of iron; it contains 40 per cent. of iron.

6 Ferruginous sandstone; from the Alejico district, found in continuous layers of 3 yards thickness; it contains 30 per cent. of iron.

7 Grey pig-iron, produced from the former ores, smelted by the Palentina Leonesa Company in an English furnace; used for forging and casting.

8 White grey pig-iron, produced from the former ores; only used in forging.

9 Forged and refined iron, from the two former, which yield 72 per cent.

10 Kaolin, from the district of Gradoso, found in beds of large dimensions, and used in the fabrication of fire-bricks.

11 Kaolin, from Tejera, adapted for the manufacture of china.

12 Fire-clay, from Gradoso, found in layers beneath the Kaolin, and employed in making fire-bricks, in conjunction with the same.

13 Native gold, and auriferous earths from the alluvials in the valley formed by the river Pequeno, in the Upper Cabrera. These alluvials cover a large extent of surface in the province.

14 Coal, from the Sucesiva mine, Saclites district, found in a layer of 2-33 yards thick.

15 Coke, from the preceding, obtained in the open air, yielding 55 per cent.

16 Coke, from the same, obtained in close furnaces, yielding 65 per cent.

17 Marbles of various colours, from the neighbourhood of Bonar, and used in ornamenting edifices.

18 Marbles of various colours, from the neighbourhood of Cucta, used for the same purposes.

[The series of specimens of iron from the province of Leon includes a great variety of minerals, in which iron is present under various and different forms of oxidation and carbonization. Some descriptions of iron, called "argillaceous," and ferriferous gravels, are also very plentiful.

On the northern faces of the same class of mountains

are found the iron ores of the Asturias. Their nature is identical with those of Leon—the same oxides, peroxides and hydroxides. The veins are extremely rich. The great foundry at Truibo employs the hydroxide in the casting of cannons and other objects, which were exhibited at the last Madrid Exposition. The bust of the King, which has been transmitted to London, is executed in this hydrous oxide. The Asturian specimens comprise "olignite iron" from Mount Arrario, and samples of a very rich ferrous gravel from Mount Sant Andros.

In the same northern region of Spain, but somewhat more to the east, she possesses very rich mines in the provinces of Alava and Guipuzcoa. From these is produced the famous Biscayan iron, so carefully fluxed in the Catalonian foundries, and of whose products two pieces of artillery, forged by the partisans of Don Carlos in the city of Ouate, in 1837, are exhibited in the Great Gallery of the Exhibition Building.

The minerals of the Biscayan series are—spathic iron (from the Sierra d'Arbalan, where there is now being worked a vein of nearly 4 metres (13 feet) in thickness, and of which the iron sells on the spot at 2 reals (5½d.) the quintal, and reniform hematites. The pit-coal consumed in these foundries is that of Asturias. This mine is modern, and capable of producing 25,000 quintals of metal per annum.

Many districts of the province of Guipuzcoa, of Estragues (including the locality in which the very rich veins of Heraguizurla occur), of Andalusia (where the magnetic iron of Marbella is met with, which is employed in the two great mines the property of Señor Heredos), of Malaga, Beires, Becarés, in Andalusia, Pedroso,—abound, all of them, more or less, in iron of various kinds, and abundance of charcoal for smelting it.]

18 The INSPECTORS of MINES of LUGO, ORENSE, and CORUNNA.

- 1 Argentiferous ores, from the mines of Messrs. Remisa & Co.
- 2 Samples of lead, obtained in a large experimental foundry.
- 3 Specimens of tin, from the Avion mountains.
- 4 Specimens of Kaolin, fire-clay and fire-bricks, used in the Sargadelos factory.
- 5 Crucibles and fire-bricks from Lugo.
- 6 Fire-bricks, from the neighbourhood of Santiago.
- 7 1st. Nickel ore, from the neighbourhood of Cape Ortegá; 2nd. nickel, with efflorescences of native sulphate; 3rd. native sulphate of nickel, crystallized, proceeding from the natural vitriolization of ore No. 1; 4th. hydrated oxide of nickel, from the decomposition of the sulphate No. 3; 5th. pure metallic nickel, obtained from the reduction of the oxalate of nickel proceeding from the decomposition of the sulphate No. 3, and by the reduction of the oxide No. 4.

19 The INSPECTOR of MINES of MALAGA.

- 1 Galena, with iron pyrites, from Mijas. The vein now explored produces on an average 38 per cent. of lead, and 8 adarmes of silver per quintal of 100 lbs. Spanish.
- 2 Galena, with hydroxide of iron, from Mijas; this is reduced in Spanish reverberating furnaces.
- 3 Galena, fine grain, from the Sierra de Nerja, found in layers and bunches, in a crystalline limestone; produces good lead.
- 4 Galena, soft and antimonial, from the strata of Marbella, found of 60 yards thickness in the transition. Produce 40 per cent. of lead, and 2 oz. of silver per quintal.
- 5 Magnetic iron, from Marbella. This rich vein is

worked from the surface; it gives on an average 60 per cent., and the annual produce amounts to 180,000 quintals.

6 Antimoniuret of nickel, from Carratraca; appears in nodules or nuclei, imbedded in a serpentine much pervaded by felspar.

[Nickel is met with in the vicinity of Cape Ortegá, in various conditions of combination. The specimens in the Exhibition are—of native sulphur, of chlorure, of oxide. The metallic specimen was obtained by the reduction of the oxalate product of the decomposition of the sulphate and the reduction of the oxide. In this metallic state the nickel sells for 100 reals, or more than 25 francs (17. 0s. 10d.) the ounce; whereas the ore itself is not worth more than 8 reals, or 2 francs (1s. 8d.) the quintal. Sulphated nickel, in its native state, fetches, at most, but 20 reals or 4s. 2d. the ounce; and the hydrated oxide, which is obtained from the decomposition of the sulphate, about the same price. Very recently, the Spanish journals have announced the formation of a company at Malaga for the working of a mine of nickel, which has been discovered at the surface of the soil, among the mountains of Casarabonela, the ore of which sells, in the port of Malaga, at nearly 50 francs—27. 1s. 8d.]

7 Graphite or black lead, from the Cueva Sibajas, in the Sierra Bernieja, district of Benahavis, found in knobs imbedded in serpentine. These mines have been worked for a century, and have produced more than 400,000 quintals. It has been surveyed to the depth of 70 yards.

8 Pyrites of iron and copper, from the Sierra Bermeja, district of Benahavis; it appears in threads winding in the serpentine.

9 Fictile or plastic clay, used for pottery; the finest is used for modelling figures.

10 Serpentine, with undulating and platy colouring, from Dialaga, district of Marbella.

11 Fullers' clay, used in the Antequera cloth and baizo factories.

20 The MINING INSPECTORS of the DISTRICTS of ZAMORA AND SALAMANCA.—Producers.

- 1 Carbonate and phosphate of lead, containing 42 per cent. of lead, and ¼ per cent. of silver. It appears in a vein varying in thickness from 4 to 14 inches, in the mine of Santa Clara.
- 2 Argentiferous lead, produced from the former, in furnaces *de manga*; it contains small quantities of arsenic and antimony, which render its smelting difficult.
- 3 Silicate of antimony, containing 60 per cent. of antimony, found in a vein of from 6 to 24 inches thick in the Generala mine, in the same district.
- 4 Leafy-regulus of antimony, produced from the former.

[The Society of "Marte," in the province of Zamora, works an ore of antimony, samples of which may be seen at the Exhibition. It is a silicate. In the veins there sometimes are found round lumps (*mayax*) of sulphuret of antimony, containing a little silver. These are fused in crucibles, set in small drawing furnaces, where they lose as much as 20 per cent. of the 60 per cent. of metal that the ore contains. At Ateca, likewise, in the province of Saragossa, they obtain ores of antimony, which sell at 45 francs the quintal. Antimony, in combination with nickel, is found, also, in the serpentine rock, with a great deal of feldspar, at Carratraca (province of Malaga), and sells for 5 francs the quintal.]

5 Ore of oxide of tin, partially argentiferous, containing 55 per cent. of tin, found in irregular veins in the Santa Clotilde mine.

6 Tin, obtained from the same mine.

[The Spanish collection offers but few samples of this

valuable metal. These are supplied from three different districts of the Peninsula—namely, from the mountains of Arion, from the province of Lugo, and from the province of Orense, both in the kingdom of Galicia. This ore is sold at 70 reals the quintal, and the smelted tin at 395 reals, or 100 francs (4*l.* 3*s.* 4*d.*) per quintal. Another ore of oxidated tin, which contains some portion of silver, is quarried at Corrascolo, commune of Villadepera, in the province of Zamora. It yields 55 per cent. of tin. In the Exhibition are deposited specimens of tin from various mines now being worked in the province of Orense; also a single sample of the tin of Zamora.]

7 Fire-clay, called *barro de zamora*. Found in abundance, and used for the manufacture of kitchen utensils and crucibles.

8 Ore of hydrous oxide of iron, from the St. Antonio mine, at Alamos, district of la Alberca; it contains 45 per cent. of iron.

9 Ore of carbonate of iron, from the Beneficencia mine at Herrerias, district of la Herguijuela; it contains 40 per cent. of iron.

10 Ore of sulphuret of lead, from the Marilla mine, district of Campillo de Salvatierra; it contains 62 per cent. of lead, and is found in a vein of from 6 to 12 inches thick.

11 Ore of carbonate of lead, from the same mine; found in contact with the preceding, and containing 38 per cent. of lead, and $\frac{1}{4}$ per cent. of silver.

12 Yellow rock crystal, from the mine Carmen del Brazil, situated at Majaditas, district of Villasbuenas. It is worked like the topaz, and known in commerce by the name of the Bohemian topaz; it varies much in price, according to the clearness and colour of its crystals.

21 The LEONESA ASTURIAN COMPANY, *Pola de Lena, Oviedo*—Producer.
Specimens of steel.

22 AMOR (D. FERNANDO), *Cordova*.
Ironstone from Villafranca. At this place the ore forms an entire mountain of considerable size.

23 GIBÓ (D. JUAN), *Malaga*—Producer.
Specimens of iron, from the works of El Angel.

24 THE PEDROSO IRON COMPANY, *Pedroso, Seville*.
Specimens of cast, rod, and plate iron.
Mineral coal.

25 FERNANDEZ (D. VALERIANO), *Seville*.
Specimen of fine copper.

26 IBARRA (D. JOSÉ MARIA), *Seville*—Exhibitor.
Mass of copper.

27 The INSPECTOR of MINES of the DISTRICT of PALENCIA—*Province of Leon*.
1 Coal, from the mines of the town of Barruelos. Various veins have been discovered of 3, 8, and 12 feet in thickness: five of these mines are in operation.
2 Coke, from the same works: made in the open air, in heaps, which give 200 to 400 arrobas of 25 lbs. each, according to their volume. One hundred parts of coal produce forty-five of coke.

[The coal deposits of the Asturias are chiefly of the carboniferous period, and rise from beneath tertiary rocks, covering the plains of Leon and Castille. They are highly inclined, and consist of numerous alternations of grit and shale, with thin beds of limestone, together with coal seams, one of which is of good quality, and nearly 9 feet thick. After these, and below them, appear a multitude of other seams, of older date than the coal of other countries of Europe; and connected with these beds, but

always below them, are several beds of hæmatite, one of which is of pure ore, 50 feet thick, and extending to a considerable distance. These coal-fields, on the whole, must be regarded as of great value and extensive range, though at present the means of transport are too imperfect to allow of them being worked to advantage.—D. T. A.]

28 The INSPECTOR of the MINES of SORIA.

Mineral asphalt, found in an extent of more than two leagues Spanish, impregnating sand-stone layers of considerable thickness, which form the base of the mountain range of Picofrentes.

29 The INSPECTOR of MINES of the DISTRICT of CORDOVA.

Specimens of marble:—

1 Marble, from Fuente de los Frailes.

2 Marble from the quarries of Acobuchar.

3 Marble from the same quarries, differing in the colour and direction of its vein.

4 Marble from Mojon, in the same formation.

5 Marble similar to No. 3.

6 Marble from Lanchares.

7 Marble from the same place.

8 and 9 Marble from the quarries of the Cerro de Nuestra Señora. Crystals of carbonate of prismo-rectangular form are abundant in the quarries.

[Cabra is situated amongst the triassic rocks of Spain, but, like many other localities in the Peninsula, is rich in metamorphic limestones and marbles.

The value of these marbles is infinitely variable, as well as their respective qualities of solidity and shading. There is a marble from Aspeitia, employed for table-tops and chimney-pieces, that sells as high as 2½ francs the square foot. Saragossa marble, in the rough block, sells for 1, 6, and even 40 reals the cubic vara (the vara being equal to 0.89 cent.), and, when polished, it fetches 10, 42, and 160 reals, respectively. The beautiful marbles of Madrid are priced at 2 francs, and those of Grenada from 2 up to 8 francs the cubical foot. The state of the roads and communications in those provinces is such as to render almost impossible the transport of heavy dead-weight material, and at once limits the employment of these marbles to the richer classes of each country, and so maintains the high prices cited. Eight specimens are to be found in this collection of marbles from the Isle of Pines, in the near vicinity of Cuba, and in that locality marbles have long been found in great abundance, but without having yet been used in the rich Spanish colony in question, which absolutely imports others, notwithstanding, from Italy and the United States.

The alabasters and other varieties of sulphated limes come from Saragossa, Santander, and Murcia; the hydraulic limes from Alava, where they are sold at the extremely moderate rate of 18 reals the quintal. Another substance well deserving our attention is the phosphated chalk, or phosphate of Logrozan, in the province of Caeceres, in Old Estramadura. It is found in a stone-like state, and in sufficient quantities to prove the basis of useful investment; for its efficacy in imparting fertility to poor soils, and restoring those which have become exhausted, is beyond dispute. This valuable substance, however, like to many others, still awaits the industrial "herafter" of Spain.]

30 ———, D. Huelva.

Samples of marble, from a quarry in the district of Fuente-heridos.

31 THE ROYAL LIBRARY at Madrid.

Marbles: Nos. 1—5 Different kinds. 6 From the River Pinzon, Asturias. 7, 8 Calatayud, Zaragoza. 9 Tortosa. 10 Biscay. 11 Anorve (*Navarre*). 12 Sierra de Moncayo (*Aragon*). 13, 14 Calatrau. 15 Puebla de Arbroton. 16, 17 Cuenca. 18, 19 Alcarria de Irriepar. 20, 21 Cogolludo. 22 Loronteras. 23 Cabrera (*Siguënza*). 24, 25 Unknown quarries. 26, 27 Caballar, Segovia. 28, 29 Montes de Toledo. 30 Banuela de Talavera de la Reina. 31 Montes Claros. 32 Buitrago (*Castilla la Nueva*). 33 Alabastro de Monasterio. 34—37 Valencia. 38 Murviedro, Valencia. 39 Calix, Valencia. 40 Almodovar. 41, 42 Murcia. 43—45 Granada. 46, 47 Malaga. 48, 49 Ronda. 50, 51 Cabra, Cordova. 52, 53 Moron. 54 Bailen. 55 Estepa. 56 Ayamonte. 57 Sierra de Gao. 58 Cordova.—Andalucia. 59 Sierra Morena. 60—63 Consuegra (*Mancha*). 64—66 Urda. 67, 68 Villamayor. 69, 70 Puerto Lapiche. 71, 72 Salceda. 73 Manzanares. 74 Santander. 75—83 Espejon. 84, 85 Lastra de Cuellar. 86 Castro Mocho. 87 Leon.—Old Castile.

[Spain abounds with crystalline rocks of all kinds, among which are included a vast variety of marbles in all conditions, from the finest statuary marble, to others which are only adapted for building purposes. The former are chiefly metamorphic, and of doubtful age, and occur especially in the Sierra Nevada. The oolitic rocks, which are developed to a great extent in Old and New Castille, and the cretaceous rocks of the northern districts of Spain, yield large supplies of the more varied and less perfectly crystalline varieties.—D. T. A.]

32 ———, D., Saragossa.

1 Marble, from Calatorao, Fuentes de Ebro, and Alhama; alabaster from Roden.

33 ———, D., Oviedo.

Jet, in the natural state, and polished, from the district of Villaviciosa. It is manufactured into various articles which are sold in the neighbourhood.

33A ———, D., Canary Islands.

Carbonate of soda, extracted from the Salsola soda, which is produced in great abundance in these islands.

Carbonate of soda (native mineral), of which there is a stratum running almost horizontally along the brow and the sides of the peak of Teneriffe.

34 SANTOS Y DIAZ, D. J., Havannah, Cuba.

Specimens of marbles.

35 THE INSPECTOR OF MINES OF THE DISTRICT OF BURGOS.

1 Glauberite, from the mines of the town of Cerezo, found in great abundance, situated between horizontal layers of limestone and clay.

2 Crystallized sulphate of soda, produced from the Glauberite; 3, anhydrous, or calcined sulphate, from the same.

[*Glauberite* is an anhydrous sulphate of soda and lime, and is found chiefly in some parts of Spain, and at Vic (department de la Meurthe), disseminated in common salt. It has only been found crystalline, and the crystals injure on exposure to a damp atmosphere. In the *Polyalite* of Ischl, in the Tyrol, and elsewhere, potash replaces the soda; but in other respects the minerals and glauberite are identical. The district of Burgos is chiefly in the upper oolitic or cretaceous series.—D. T. A.]

36 THE ANANA SALT WORKS, Alava.

Common salt. Native crystallized salt.

37 ———, D., Alicante.

Specimens of barilla.

38 ANGULO (D. ISIDORO), Barcelona.

Specimen of Barilla. Sulphate of soda extracted from running waters in the immediate neighbourhood of Cervera.

39 ELIAS (D. MIGUEL), Barcelona.

Native salt (*Sal gema*), from Cardona.

[The "sal gem" of English commerce is rock-salt, or chloride of sodium; "nitro" being nitrate of potash, or saltpetre.]

40 MACRAUDY (D. AUGUSTIN JUAN), Carthagena, Murcia.

Specimens of alum manufactured by the exhibitor.

41 SEMPERE DE (D. FRANCISCO), Elche, Alicante.

A lump of kelp, manufactured by the exhibitor from the plant of the same name cultivated in the province of Elche (*Salicornia*).

42 ———, D., Granada.

Seed and stone barilla.

[Barilla is prepared to some extent in the provinces of Valencia and Murcia, from the *Salsola sativa* and the *Salicornia*, which are there cultivated for the purpose. On the salt marshes and littoral deposits on the south-west coast these plants are met with wild, and are there used for the same purpose. Its commercial value depends on the per centage of alkali it contains.]

42A ———, D., Cadiz.

Crystallized sulphur, from the abandoned mine of Conil.

Ecume de mer (meerschaum), from San Lucar.

43 MAISTERRA (D. MIGUEL), Lorca, Murcia.

Native salt in crystals.

44 PAULO Y BARTOLINI (D. MANUEL), Saragossa.

Nitrate of potash.

45 ———, D., Lorca, Murcia.

Barilla plant, very large specimen.

Sulphurous marl and compact native sulphur, from the hills of Serrata, district of Lorca.

Alum, refined, used as a mordant, from the Barcelonesa factory in Mazarron.

Selenite, from the Serreta hills.

White lead: three specimens from the factory of Almarsa.

Stone barilla, or subcarbonate of soda, impure.

[It is a fact universally known, that on the southern coast of Spain, in many of the regions adjacent to her shores, and in the Canary Islands, the "*Salsola soda*," and other species of salts from whence the crystallized carbonate is derived, have been produced spontaneously, as at present, from time immemorial. But this branch of national industry has been seriously interfered with by the introduction into commerce of artificial alkalis. Yet the manufacturers of neighbouring countries in which natural kali abounds, continue, notwithstanding, to employ the Spanish product, in spite of its incontestible disadvantages for the saponification of oils. The Spanish collection comprises some natural alkalis of Alicante, Murcia, Barcelona, Granada, the Canaries, &c. The price of these rough salts, in the mass, is not less than 18 reals, or nearly 5 francs the quintal. The alkali of Murcia and that of Barcelona fetch sometimes as much as 11 francs the quintal.

Carbonated kali, in its natural state, is procured in the island of Teneriffe, in an almost horizontal bed, at the base of the Pic or Volcano of Teida. It is extremely plentiful

in the province of Burgos, and is found imbedded in layers of argillaceous clay and sulphated chalks among the hills on the banks of the river Tiron, a tributary of the Ebro. This mineral is worked in situations where it can be dissolved in water, which is afterwards evaporated, in order to obtain the crystallized sulphate. When this product is calcined, it assumes the name of *sulphate anhidre*. In its first state it is sold for 3 reals the arroba; in its second, at double that price, that is to say, from 3 francs 25 cents. to 6 francs 50 cents. the quintal of 48 kilogrammes.

Saline springs are encountered likewise in many parts of Spain, the density of whose waters is from 7 to 8 degrees, Baume; their waters flow down from the hills, and are found to contain sulphuretted kali in solution. Such springs are to be met with at Cervera, in Catalonia.

Of still more recent origin are the excavations for Glauber salts. But a much greater scope for the sale of this product may be anticipated, and its much more lucrative employment, from the introduction of other branches of trade into Spain, where, at present, the whole consumption of sulphate of soda is actually limited to a single glass manufactory in the village of Rosas, province of Santander. The common salts to be seen in the Exhibition have been supplied exclusively from the provinces of Almeria and the salt springs of Alicant, in the province of Alava. From Cordova—a country celebrated for its richness in the "gem" salt—there are some very fine specimens; but a more extensive series would have been, at once, a much more varied and a much richer illustration of this class of minerals.]

- 46 DURANGO Y TRIGO (D. IGNACIO), *Saragossa*.
Sulphur, from the mines of Teruel, &c.

[Sulphur is found in various regions of Spain, under all conditions—native, earth-combined, or in sulphuric nodules. It occurs abundantly, under the second of these states, in Murcia, where also we meet with pure sulphur. Sulphur is refined at Lorca, in a factory at which it is sold for 30 reals, or about 6 francs the quintal of 48 kilogrammes.*

In the Spanish Gallery, at the Great Exhibition, may be seen some very beautiful specimens of crystallized sulphur from the ancient but abandoned mines of Covil, in the province of Cadiz. The sulphur formation in which these mines have been excavated has lost its industrial value, but still retains all its claims on the attention of mineralogists and geologists. At Ternel, in the province of Salamanca, there are very extensive sulphur diggings. The sulphur is sold at various prices, according to the quality; in the rough mass or block (*piere brute*), at 28 reals; in roll, at 40 reals; and as flour of sulphur, at 60 reals the quintal—respectively, 6s. 7½d., 9s. 2¼d., and 13s. 9d., English, per cwt.]

- 47 YUST & Co., *Lorca, Murcia*.
Specimens of artificial sulphur.

- 48 PRATS (D. FRANCISCO), *Alava*—Producer.
Specimens of limestone and hydraulic lime.

- 49 CONCHA (D. ANTONIO), *Caceres*.
Phosphorite of Estramadura.

[The phosphorite of Estramadura exists as a vein, or in veins, coming to the surface near Logrosan, a few leagues east of Caceres. The surrounding rocks are granite, on

* The kilogramme being equivalent to 2 lbs. 3 oz. 4 dr. 16 gr. English, this quintal does not exceed 100 of our pounds.

which it seems to rest, and clay slate, probably Silurian, which overlies it. The direction of the phosphorite is N.N.E. to S.S.W.; the width varies from 5 or 6 to 16 feet; its depth has not been proved to a greater extent than 10 feet, but is probably considerable, and it has been traced for some miles. It somewhat resembles wavellite in its star-like arrangement, and there appear to be several small veins besides the principal one. It contains 81.15 phosphate lime and 14 fluoride calcium. It is very indestructible, resisting the action of the weather, and not mixing with or qualifying the soil by ordinary disintegration. The means of transport are at present far too imperfect to allow of this mineral being made use of to advantage for agricultural purposes.—D. T. A.]

- 49A CUESTA (D. AGUSTIN DE LA), *Santander*.
Sulphate of lime.

- 51 YSASI (D. MANUEL), *Ordnance of Toledo*—
Manufacturer.

Large earthen wine-jar (Tiaja), manufactured in the village of Toboso, in La Mancha.
An original piece of the wall of the palace of the Alhambra at Granada.

- 53 THE AULENCIA COMPANY, *Madrid*—Producers.
Fire-bricks.

[Refractory clays are exceedingly plentiful at Sorbas, in the province of Almeria; at Zamora, where they are used for making crucibles; at Leon, where they are found combined with kaolin, and applied to similar uses with that product; at Alcoa, in Galicia, &c.; kaolin is no less abundant. The Exhibition has some samples of kaolin from Nijar, province of Almeria, the quintal of which is worth about 3 reals or 80 centimes (8d.) It is employed, at Seville, in the manufacture of china-ware. In the same locality they procure a sort of puzzolana, or silicate of magnesia, the price of which is about 8 reals the quintal, and which is employed in the manufactories of Catalonia. There is also some kaolin to be found at Leon, in that district of pit-coal and iron-producing country, which we have already indicated—the price extremely moderate, the layers immense. It is sold at the foot of the quarries at 2 maravedis the quintal, equivalent to little more than 1 sous per 100 kilogrammes. Its use is limited solely to the making refractory bricks; but when it is known that it is in the same localities where pit-coal, woods of all kinds, iron clays of every descriptions, &c., are found in vast abundance, we cannot refrain from predicting a most flourishing industrial destiny to this remarkable mineralogical country.

The factory of Sargadelos employs the kaolins which are so abundant in Galicia; and the association established near Madrid, under the designation of "The Aulencia," makes also refractory bricks at 55 reals per hundred of the squared soil, and at 3½ reals the arroba of those of other forms—that is to say, little more than 8 francs per 100 kilogrammes. The plastic clays are of great variety, and some of them of remarkably fine grain. They are to be found diffused everywhere over Spain; but beyond the purposes of pottery, they are but little in demand. Of their superior quality a fair estimate may be formed from an inspection of the little figures or statuettes made in this material at Malaga, and representing Andalusians in various costumes such are to be seen in the Spanish collection.]

- 54 TEGER & Co., *Segovia*—Manufacturers.
Pavement tiles.

- 55 GONZALEZ Y VALLS (D. RAFAEL), *Valencia*—
Manufacturer.
Twenty-two frames, with 204 faïence tiles.
- 55A The APOLYTOMENE COMPANY, *Madrid*—Manu-
facturers.
Specimens of articles made of apolizoo or artificial
marble.
- 56 —, D., *Albacete*.
Samples of wheat.
- 57 BADILLO (D. JOSÉ MARIA), *Ciudad Real*.
Wheat of Ciudad Real of two kinds, *macho* and *candeal*,
grown in the province.
- 58 GUZMAN (D. ROQUE), *Ciudad Real*.
Wheat of two kinds—*jijona* and *candeal*—grown in the
province of Ciudad Real.
- 59 —, D., *Almeria*.
Fine and rough sedge; wheat from the Sierra de Filabres;
colocynth; sage (*Salvia officinalis*); estacarcocin (*Peganum
harmala*), used as a spice, and for dyeing red; common
olive oil.
- 60 —, D., *Huelva*.
Specimens of the best kinds of wheat grown in the
province, which constitutes its principal riches.
- 61 PINAN (D. JOSÉ), *Leon*.
Wheat without the ear (called *mocho ó chamorro*), grown
in the province of Leon.
- 62 NUÑO, D. DIEGO, *Guadalajara*—Producer.
White wheat from Tortola.
- 63 —, D., *Oviedo*.
White wheat (*Escanda menor*).
White and yellow maize.
- 64 CEA (D. PEDRO ANTONIO), *Leon*.
Wheat (called *Blanquillo*; *Triticum hibernum* var.)
grown in the province of Leon.
- 65 MACORRA (D. FERNANDO), *Malaga*—Producer.
Wheat grown in the same province; the variety is
known by the name of *recio* or *claro*.
- 66 —, D., *Valladolid*.
Specimens of wheat from Medina del Campo, Pedrosa,
and Gomeznarro.
- 67 DE TORRES (D. MANUEL MARIA), *Seville*.
Wheat (called *cerrado de color*), grown in the province
of Seville, from Arahál.
- 68 TERNERO (D. JOSÉ), *Seville*—Producer.
Wheat (called *pinton*), grown in the province of Seville,
from Marchena.
- 69 FERNANDEZ DE CORDOBA (D. MANUEL M.),
Constantina, Seville.
White wheat (known by the name of *papalina*).
- 70 GINOVES (D. JOSÉ), *Segovia*.
Wheat (called *chamorro*) grown in the province of
Segovia.
- 71 BECERRIL (D. ANTONIO), *Segovia*.
Wheat (*candeal*) grown in the province of Segovia.
- 72 —, D., *Valencia*.
1 Rice, common, in husk, and white; 2, moscado;
3, long; 4, superior.
5 White wheat; 6, from Alberique; 7, canivano; 8, red;
9, ears of nine varieties of rice; 10, four varieties of maize.
11, Onions white "*Albarranas*" (*Vegiena scilla*).
12, Alubias del pinet. Legumes. 13, Chufas (*Cyperus
esculentus*). 14, Mani. 15, Tares.
- 73 ENRIQUEZ, D. J. *Alicante*.
Sample of white maize.
- 74 COLOM, D. J., *San Lucar, Cadiz*.
1. Barley, pearled, cultivated by the exhibitor in San
Lucar. 2. Mustard seed, wild.
[Spain, owing to her geographical position, possesses
the finest climate in Europe, and has the greatest range
of vegetable productions. All the cereals, with the ex-
ception of oats, are grown in the more northern pro-
vinces, and in elevated districts; while the cotton-tree,
the sugar-cane, and other tropical plants, are cultivated
successfully in the south and west provinces. Although
Spain possesses such great advantages, both in her climate
and in the general fertility of her soil, the agr.culture of
the country is in a very backward condition. The pro-
duction of corn is barely sufficient for home consumption.
Her exports consist chiefly of articles peculiar to the
country, such as wool, silk, wines, oil, cork-wood, dye-
stuffs, &c.—J. W.]
- 75 SALIDO (D. AGUSTIN), *Ciudad Real*—Producer.
Wheat (called *candeal de raspa*), grown in the pro-
vince of Ciudad Real.
Guijas ó pitos, pulse.
Yeros, a species of lentil (*Ervum*).
Rye.
- 76 THE MUNICIPAL CORPORATION, *Castellon*.
Maize (*Mazorca larga*), grown in the same province.
Cultivated in the vicinity of the city of Castellon, in two
varieties—one white, and the other yellow; exported in
large quantities, besides supplying the consumption of
40,000 inhabitants.
- 77 PENAFIEL, E., *Ciudad Real*—Producer.
Panic grain (*Cenchrus spicatus*).
- 78 BENITO (D. MIGUEL), *Ciudad Real*.
Indian millet (*millium sorghum*).
- 79 —, D., *Gerona*.
Maize, of two kinds. Weld.
Anglica (*sylvestris*). Valeriana (*officinalis*).
[Maize is the object of a culture much more general
in the departments of the north and the south of Spain
than rice, and constitutes a great resource for the food of
the people. In Galicia it forms the basis of the food of
the country people, under the name of *brona*, and in the
shape of loaves of large size, which they have the art of
preparing after a particular manner, and of rendering very
agreeable. At Castellon de la Plata they prepare the
maize flour after a similar manner. The maize of the
south of Spain (which is to be found in the Exhibition),
is remarkable for the thickness of the heads. The prices
are very variable, and, it as luckily happens, have relation
always to given measures of capacity of several kinds for
which we cannot at the present moment assign the order
of their rates correctly, nor specify any metrical equiva-
lents.]

80 —, D., *Granada*.

- 1 Wheat, "chamorro;" 2 wheat, "fanfarron lampiño;" 3 wheat, "cucharets;" 4 White maize. 5 Sugar canes, from Almuñecar.

81 —, D., *Huesca*.

- Cereals, pulse, and fruits grown in the same province:—
1 White wheat (*Escanda menor*). 2 Wheat (*Caudeal*). 3 Beans. 4 Round beans. 5 Almonds. 6 Walnuts. 7 Dried peaches.

82 —, D., *Jaen*.

- Dried peaches from Alcaudete and Bedmar. Wheat, (called *Redondillo lampiño*), from Alcalá la Real, and from Ubeda (called *Fanfarron lampiño*).

83 BARRIENTOS (D. FERNANDO), *Malaga*.

Maize, grown in the province of Malaga.

84 PIEDROLA (D. MANUEL), *Malaga*—Producer.

- 1 Indian wheat, grown in the province of Malaga, cultivated in Churriana, being from the seeds of the 88th crop sown.

2 Batatin—sweet potato (*Batatos edulis*).

85 CASADO (D. JOSÉ PEDRO), *Malaga*.

- Wheat grown in the province of Malaga (of the kind called *chamorro*).

Sweet almonds (of the kind called *largo*).

Tares (*algarroba*; *Ceratonia siliquosa*).

86 —, D., *Murcia*.

- 1 Beans (called *paniceras*). 2 Capsicum pepper, ground (called *de flor*). 3 Flour. 4 Madder root. 5 Root of *Anchusa tinctoria*. 6 Weld.

87 —, D., *Murcia*.

- 1 Wheat (*racemoso*; many-eared); 2 white. 3 Panic grain, of two kinds.

88 MONFORT, D. F., *Torrente del Cinca Huesca*—Producer.

- 1 Wheat grown in the province of Torrente de Cinca. 2 Rye grown in the same province. 3 Beans of two qualities. 4 Different grains peculiar to the same province. 5 Dried figs. 6, Dried peaches.

89 MARTINEZ Y PEREZ, V., *Valencia*—Producer.

Rice grown in the province of Valencia.

[The cultivation of rice in Spain is peculiar to the kingdom of Valencia, where it is carried on upon soils purposely inundated. Four specimens have been forwarded to the collection, under the designations of "Common rice" (*Oryza sativa*), at 14 reals the arroba; Moscada or red rice (*O. rubra*), at 16 reals; and long rice (*O. elongata*), at 15 reals; Hermoro, or fair rice (*O. pulcherrima*), at 16 reals. These prices are equivalent to 32, 35, and 37 francs per 100 kilogrammes.]

90 FERNANDEZ VITORES (D. JUAN MANUEL), *Valladolid*—Producer.

Wheaten flour of first, second, and third qualities.

91 —, D., *Zamora*.

- 1 White wheat, from Hiniesta and Piedrafita de Castro. 2 Beans, from Puebla de Sanabria. 3 Flax, from Camarzana; 4 from Puebla de Sanabria. 5 Weld (*Reseda luteola*), from Zamora. 6 Lichen, from Puebla de Sanabria. 7 Chamomile, from Villafáfila.

92 —, D., *Saragossa*.

- 1 Wheat (called *ambrilla*), amber. 2 Maize (yellow); 3 (*ambrilla*), amber. 4 Alubias de Moncayo. 5 Dried peaches, from Calatayud. 6 Walnuts, from Calatayud. 7 Dried figs, from Caspe. 8 Saffron. 9 Treacle, from grape sugar.

93 —, D., *Huelva*.

- 1 Beans. 2 Large acorns, and branches of the oak which produces them. 3 "Grana" cochineal.

[A certain red colouring substance, known under the name of *Grana Kermes*, is collected from the shrubs and underwood of the province of Huelvas. We had suspected that this colouring matter was, in fact, identical with the minute insect which we find in *Quercus cochenilifer*; but, on a closer examination of the specimen that has been deposited in the Exhibition, we have our doubts about this fact. "Grana Kermes" is purchased at Valencia (where it is employed in some of their manufactures) at 9 reals, or, at the utmost, at 3 francs (2s. 6d.) per pound. In former ages, the collection of this substance would seem to have constituted a considerable branch of trade, for we have seen some ancient "ordinances," and especially one of the year 1309, authorizing the collection of tithe on the "grana" gathered in Murcia and other districts of that bishopric.—R. de S.]

94 THE AGRICULTURAL BOARD, *Malaga*.

- 1 Chick-pea ("Garbanzo;" *Cicer arietinum*), from Alfacate. 2 Walnuts, (called "Fanfarronas"). 3 Chestnuts. 4 Almonds. 5 Dried peaches.

95 GIL (VICENTE), *Segovia*—Producer.

Chick-peas (*Garbanzos*; *Cicer arietinum*).

[*Garbanzos* is the grain or vetch of the *Cicer arietinum*, a plant widely diffused over, and of very general use in Spain, at the tables of the rich as well as at those of the poor, forming an indispensable and characteristic ingredient in the famous *olla-podrida*. It abounds in the two Castilles, and in the southern provinces, but is rare, or wholly uncultivated, in the northern provinces; in which, however, it is in equally general use. The qualities of the carbanzos, which are determined by their relative size and by the fineness of their meal (*féite*), vary much; and the prices, of course, in proportion. *Garbanzos* of Valladolid range from 90 to 140 reals for the fanegua, or nearly 4 arrobas, or 50 kilogrammes. Those of Segovia fetch 100, 115, and 120 reals; those of Zamora (which are the celebrated kind of Fuente Sanco), at 120; of Malaga, at 170 reals. The prices of these products are always dearer on the coasts of Spain.]

96 —, D., *Valladolid*.

- Garbanzos* (*Cicer arietinum*), chick-pea, grown in the province.

97 —, D., *Alicante*.

- Almonds:—"pestaneta;" "planeta;" "blanqueta;" "bitter;" "batle." "Zahina" (*Sorghum*). Indian millet.

98 VALGOMA (FRANCISCO A.), *Cacabelos, Leon*.

- 1 Dry chestnuts. 2 Beans. 3 Beans of superior quality. 4 Various skeins of combed flax.

[Chestnuts abound in the two extreme zones of Spain, the north and the south. The same observation holds good as to the greater dearness of this fruit on the sea-coast, where the trade is active, as we have recently made on another product.]

Haricots (beans) are known in Spain under the different names *judias*, *habas*, *frijoles*, *alcivias*, &c., representing very distinct varieties, all of which are cultivated in the several provinces. They might be made to constitute, as well as the other farinaceous fruits of Spain, an important branch of her export trade, for they are raised in prodigious quantity and at a very moderate cost.]

99 THE AGRICULTURAL BOARD OF CORDOVA.

1 Dried figs. 2 Raisins. 3 Olives. 4 Zaragatona (*Psyllium*).

5 and 6 Mustard of Santaella.

7 Olive oil, drawn with and without pressure.

[There are four species of this class of products in the Spanish collection, namely — raisins, figs, plums, and peaches.

The qualities and prices of raisins are too well and generally known to require to be noted here in any detail. But very few specimens of them have been sent to the Exhibition.

The value of figs appear to be given at such very different rates as to make it a matter of too much difficulty for us to assign the cause of such differences. Generally, they do not exceed 20 reals the arroba, at Cordova and Malaga; but in the former of these provinces they sometimes rise as high as 60 reals. The figs of Huelva are quoted at from 25 to 30 reals the arroba; and in the interior, at Saragossa, they sell at 48 reals the fanegua.

Plums, whether those of Cordova or of Malaga, appear to bear the same price of 20 reals per arroba. The most celebrated kinds seem to be those of Briego and Mantilla.

Peaches are dried in the sun; and in that state are called, in Spain, "*orejones*." The specimens in the Exhibition are from Jaen, Malaga, Huesca, and Saragossa. None have been sent by the other provinces.

100 ALVEAR (D. JUAN), *de Cordova*.
Sweet-smelling prunes from Montilla.

101 ARAMBARRI (D. GREGORIO), *Cordova*.
Sweet-smelling prunes.

103 ARAMBARRI (D. GREGORIO ANTONIO), *Cordova*.
Specimens of dried figs.

104 LABAT (D. MANUEL), *Cordova*—Producer.
Giant walnuts, of peculiar kind, grown in the province of Cordova; from Palma del Rio.
Honey from orange-flowers.

105 CASADO (D. JOSÉ), *Malaga*.
Muscatel raisins.

106 ENRIQUEZ (D. JOAQUIN), *Malaga*.
Specimens of dried figs.

107 OLMO (D. JOSÉ), *Malaga*—Producer.
Prunes, cultivated at Priego.
Dried figs.

108 MÁRQUEZ (D. JOSÉ), *Malaga*—Producer.
Olives, cultivated in Alora and Casarabonella; they are very mild, and easily separated from the stone.

The abundance of the olive-tree plantations in Spain is well known. The specimens of species of the olive which are shown in the Exhibition may give some idea of the beauty of this fruit, both at Cordova and at Seville. The specimens from other provinces are not so remarkable for their size, but they do not yield less oil. We notice them here considered as an article of our table fruits, dressed after the Spanish manner, with some salt and laurel leaves. There are numerous varieties of the olive throughout the whole south of Spain, in Andalusia, Valencia, Murcia, &c. Branches of the tree prepared, as for a herbal, were sent over, but do not figure in the Spanish Gallery on account of the space they would have occupied. The value of olives of Cordova, which are the most famous of all, varies from 70 to 90 reals, the fanegua; those of Malaga and Seville, to 50 reals; and the largest of this latter province, to 120. But everywhere the prices vary of course with the size and the flavour of the olives.]

109 BOARD OF TRADE OF REUS.

Almonds.

[Almonds are a fruit much less widely diffused than the walnut, the limits of their production in Spain being bounded by two zones sufficiently remote from one another, on the Mediterranean and on the Cantabrian coasts. Almonds are sold by weight or by measure, and the value of the latter, in each province respectively, it is difficult to determine. There are five varieties of this fruit in the Spanish collection. At Tarragona the cultivation of almonds is very considerable, and the production is said to amount to 60,000 *cuarteras*, a measure of capacity equal to about 1½ fanegas of Castille.

110 —, D., *Oviedo*.

Hazel nuts, chestnuts, and walnuts, principally exported to England.

The walnut-tree is celebrated throughout almost every region of the Peninsula. The most remarkable of the fruit sent to the Exhibition came from Cordova and Malaga, where they are sold by the hundred; in the other provinces, by the fanegua measure.

Hazel-nuts, which are equally abundant with almonds, have been transmitted to the Exhibition from Tarragona, Gerona, and Oviedo, countries for which the exportations of this fruit are quite remarkable. The nuts of Oviedo are the finest. The annual collection of this fruit amounts to 100,000 *cuarteras* at Reus and Falset.]

111 ZAMBRANO (D. JOSÉ), *Seville*—Producer.
Olives (of the kind called *de figura*).

112 CARABÉ (D. MANUEL), *Seville*.
Olives (of the kind called *manzanillas de la reina*).

113 LESACA (D. JOSÉ JOAQUIN), *Seville*.
Giant olives (*gordales*), from Padron.

114 THE BOARD OF AGRICULTURE, *Tarragona*.
1 Almonds. 2 Hazel nuts.

115 —, D., *Badajoz*.
Sweet acorns.

116 PARDO Y BARTOLINI (D. MANUEL), Zaragoza.

- 1 Zaragatona (*Plantago psyllium*).
- 2 Zaragatona (*Lichen pulmonarius*).
- 3 Bryony (*Bryonia alba*).
- 4 Houndstongue (*Cynoglossum officinale*).
- 5 Viper's bugloss (*Echium vulgare*).
- 6 Melilot (*Trifolium melilotus*).
- 7 Liquorice (*Glycyrrhiza glabra*).

117 ISERN, D. J., Barcelona.

A collection of plants:—

- | | |
|------------------------------|----------------------------|
| 1 Antirrhinum asarina. | 53 Liliun martagon. |
| 2 Aquileia vulgaris. | 54 Melilotus parviflora. |
| 3 Asphodelus fistulosus. | 55 Myosotis palustris. |
| 4 Andryala incana. | 56 Marrubium vulgare. |
| 5 Anthyllis tetraphylla. | 57 Melissa grandiflora. |
| 6 Anthyllis cytisoides. | 58 Narcissus juncifolius. |
| 7 Acer hispanicum. | 59 Nepeta cataria. |
| 8 Acer monspessulanum. | 60 Orchis bifolia. |
| 9 Acer platanoides. | 61 Orchis maculata. |
| 10 Anagallis carulea. | 62 Osyris alba. |
| 11 Asplenium trichomanes. | 63 Olea sativa. |
| 12 Asplenium scolopendrium. | 64 Prenanthes purpurea. |
| 13 Arbutus unedo. | 65 Phlomis lychuitis. |
| 14 Althea officinalis. | 66 Phlomis herbaventi. |
| 15 Atropa belladonna. | 67 Punica granatum. |
| 16 Buphtalum spinosum. | 68 Poterium sanguisorba. |
| 17 Bupleurum pyrenaicum. | 69 Psoralea bituminosa. |
| 18 Bupleurum fruticosum. | 70 Prunella grandiflora. |
| 19 Betonica officinalis. | 71 Passerina hirsuta. |
| 20 Convallaria polygonatum. | 72 Ranunculus bulbosus. |
| 21 Convallaria verticillata. | 73 Ranunculus granineus. |
| 22 Calendula officinalis. | 74 Ramonda pyrenaica. |
| 23 Conyza intermedia. | 75 Rubus fruticosus. |
| 24 Conyza squarrosa. | 76 Rosmarinus officinalis. |
| 25 Colutea arborescens. | 77 Rubus idaeus. |
| 26 Carduus marianus. | 78 Sambucus racemosa. |
| 27 Cynoglossum pictum. | 79 Satureja montana. |
| 28 Capparis spinosa. | 80 Scrophularia nodosa. |
| 29 Coris monspeliensis. | 81 Solidago virga-aurea. |
| 30 Coriaria myrtifolia. | 82 Saxifraga cotyledon. |
| 31 Digitalis lutea. | 83 Sideritis hirsuta. |
| 32 Daphne mezereum. | 84 Stachys hirta. |
| 33 Euphrasia lutea. | 85 Stachys maritima. |
| 34 Euphrasia officinalis. | 86 Sinapis nigra. |
| 35 Erodium supracanum. | 87 Stachys sylvatica. |
| 36 Echium violaceum. | 88 Sanicula europea. |
| 37 Eryngium maritimum. | 89 Salvia officinalis. |
| 38 Fraxinus excelsior. | 90 Smilax aspera. |
| 39 Gladiolus communis. | 91 Trichonema bulbocodium. |
| 40 Globularia nana. | 92 Tamus communis. |
| 41 Globularia vulgaris. | 93 Taxus baccata. |
| 42 Globularia alypum. | 94 Thymus acynos. |
| 43 Galeopsis ladanum. | 95 Thymus serpyllum. |
| 44 Galeopsis tetrahit. | 96 Teucrium chamæpitys. |
| 45 Humulus Lupulus. | 97 Teucrium polium. |
| 46 Hyssopus officinalis. | 98 Teucrium scorodonia. |
| 47 Ilex aquifolium. | 99 Viola canina. |
| 48 Lithospermum officinale. | 100 Veronica latifolia. |
| 49 Lonicera caprifolium. | 101 Veronica officinalis. |
| 50 Lonicera xylostemon. | 102 Veronica anagallis. |
| 51 Lamium amplexicaule. | 103 Verbascum thapsus. |
| 52 Lavandula stoechas. | 104 Vinca minor. |
| | 105 Viburnum tinus. |

These are all indigenous plants, the greater part growing at Monserrat, Monsen, and Monjuich, and many peculiar to Catalonia.

118 ALVAREZ, CALLEJA, D. S., Villaviciosa, Oviedo—Apothecary.

Extracts of aconite, belladonna, lettuce, foxglove, orange-peel, and of sarsaparilla.
Honey of sarsaparilla.
Prepared sarsaparilla.

119 —, D., Canary Islands.

A small jar of *Euphorbia lathyris*, known in the islands as *tartayillo*; abundant in Teneriffe, and medicinally employed.

Three samples of *Scilla maritima* (squill), found in great quantities on the north coast of Teneriffe.

120 —, D., Oviedo.

A collection of medicinal plants:—

- Prunus spinosa*.
Valeriana officinalis, root.
Gentiana officinalis, root.
Carqueija, flower.
Digitalis purpurea, leaves.
Carqueija, slips, with flower.

121 AMOR (D. FERNANDO), Cordova.

Albarrana, Sarsaparilla.

122 —, D., Gerona.

Medicinal plants, growing wild:—

- | | |
|------------------------|-------------------------|
| 1 Belladonna. | 8 Polygonum bistorta. |
| 2 Pulsatilla. | 9 Cynoglossum. |
| 3 Gentian. | 10 Saxifraga granulata. |
| 4 Turbet. | 11 Arnica montana. |
| 5 Alchemilla vulgaris. | 12 Arbutus uva-ursi. |
| 6 Digitalis purpurea. | 13 Aquilegia vulgaris. |
| 7 Onosma echinoides. | 14 Tormentil. |

123 —, D., Huesca.

Herbs used in medicine, which grow wild in the province:—

- 1 Sage (*Salvia*). 2 "Dedlera," fox-glove (*Digitalis*).
3 Camomile (*Anthemis*). 4 Aristolochia (*Aristolochia*).
5 Liquorice (*Glycyrrhiza*). 6 "Zaragatona" (*Psyllium*).
7 Aconite or monk's hood (*Aconitum*). 8 "Lacineo."
9 Wormwood (*Artemisia Aragonensis*). 10 Wormwood (*Artemisia camphorata*).

124 RODRIGUEZ PALENCIA (D. MANUEL), Leon.

Violet flowers, from the mountain of Babia; arnica flowers, from the mountain of Valdeburon; lime flowers, from Valdeburon; lichen (*islandicus*), from Burdango.

125 —, D., Malaga.

1 *Artemisia arborescens*. 2 *Quercus torriglia*. 3 *Atropa belladonna*. 4 *Cotula aurea*. 5 *Viola odorata*.

126 BARTOLOMÉ (D. MARIANO), Segovia.

Sage (*Salvia officinalis*).

126A GOMEZ ALVERIC, D. BUENAVENTURA, Havannah.

Various kinds of cigars.

126B GONZALEZ CARVAJAL, D. M., Havannah.

Samples of cigars.

127 DURANGO Y TRIGO, IGNACIO, Saragossa.

- 1 Lichen (*Cetraria islandica*).
- 2 Wormwood (*Artemisia absinthium*).
- 3 Sage (*Hepatica nobilis*).
- 4 Arnica (*Arnica montana*).
- 5 Foxglove (*Digitalis purpurea*).

127B FERNANDEZ D. FERMIN, Havannah.

Paper cigarettes.

- 128 MIRAT (D. GREGORIO), *Salamanca*.
Two packets of superfine starch, in stick and powder.
- 128A ACADEMY OF MEDICINE AND SURGERY,
Saragossa.
1 Lichen islandicus; 2 Lichen pulmonalis. 3 Salvia officinalis. 4 Digitalis purpurea. 5 Anthemis nobilis. 6 Gentiana lutea. 7 Valeriana officinalis. 8 Aristolochia rotunda. 9 Arnica montana. 10 Atropa belladonna. 11 Sarsaparilla. 12 Liquorice.
- 129 ZABALA, P. V., *Vittoria*.
Extract of aconite.
- 130 ———, D. *Almeria*.
Wheat from the Sierra de Filabres. Colocynth. Sage. Estacarcin, used as a spice, and for dyeing red.
- 131 ———, D., *Palma, Balearic Isles*.
"Majorca coralline" (*Fucus helminthocortis*).
- 132 THE AGRICULTURAL BOARD OF CASTELLON.
Branches of olive: varieties, called *Molcedrino, Mor-rudo, Fargo, Meno, Grosal, Blanco, Silvestre ó acebuche, Manzanillo, Colorado, Sevillano, Ulletrenco, Cuguello*.
- 133 MANSO (D. RAFAEL), *Logroño*—Producer.
Preserved capsicums.
- 133A VASQUEZ (YGNACIO), *Seville*.
Liquorice.
- 134 BECK & Co., *Seville*.
1—3 Liquorice paste. 4 Root (*rhizoma*).
[The rhizomes of the *Glycyrrhiza glabra* furnish, on decoction, a dark-coloured extractive matter, containing a large proportion of sugar. This is inspissated in the usual manner, and forms the liquorice of commerce. It is grown and manufactured to a considerable extent in the provinces of Seville, Valencia, and Catalonia.—R. E.]
- 136 ———, D., *Huelva*.
Grana lieres; cochineal dye.
- 137 GIBBERT (D. JOAQUIN), *Alicante*.
Gualda dye (*Reseda luteola*); dyer's weed.
["This is the weld of the English. It is a yellow dye, from a plant of the mignonette tribe."]
- 138 ———, D., *Cadiz*.
Madder root, of spontaneous growth, from San Lucar.
- 139 CABELLO (DA. ENCARNACION), *Ciudad Real*
—Producer.
Samples of saffron (*Crocus sativus*).
[Saffron is in very general use in Spain, being employed in every kitchen for the seasoning or the colouring of certain dishes. Thus rice, vermicelli, &c., are never eaten without having undergone the previous process of being more or less tinted with saffron; manufactures absorb the smallest portion of its total consumption. It is very common in the hot and central provinces of Spain.]
- 139A CONTI (D. VICENTE), *Coruña*.
Beef, first and second quality.
Bacon, best, with and without bone.
Pork, cured in the American manner.
- 139B ———, D., *Oviedo*.
Hams, from Avilés.
- 139C ———, D., *Huelva*.
Honey from Hinojos; chief produce of the place.
- 140 MATEZANZ (D. ZACARIAS), *Segovia*.
Madder, from Cuellar.
- 141 ———, D., *Canary Islands*.
A bundle of *Rubia tinctorum* (madder), *Raiz de rubia*, very plentiful in almost all the islands.
Two small papers, powder carmine, prepared from the same.
A bundle of *Reseda luteola* (*Gualda*), abundant on the islands.
- 142 ———, D., *Valladolid*.
Madder, in plant, powder, and extract.
- 143 SEMOVILLA (D. RAFAEL), *Segovia*.
Specimen of madder from Cuellar.
- 144 MATEZANZ (D. AUGUSTIN), *Segovia*.
Madder in powder.
[Madder known in Spain under the designation of "rubia," has been transmitted to London from seven different countries of the Peninsula. The coasts of Andalusia and of Valencia, Murcia, Segovia, and Saragossa, supply this article in large quantities. It is sold either in the fresh root, or reduced to powder, or as an extract. At Segovia and Valladolid it is largely employed in the numerous factories established there of coarse common cloths, called *Bayetes*, in which it is much used. The Canary Isles abound in madder, and the extract is sold under the designation of "carmine."]
- 145 MARTINEZ (D. JOSÉ), *Seville*.
Weld or *gaude* (*Reseda luteola*).
[*Gaude* (*Weld*, or *Dyer's Weed*), called "Guekda" in Spain, is as generally diffused over the soil of the Peninsula as madder, and, like it, it is produced spontaneously. The value of this commodity varies with the locality of its growth. *Gaude* is as plentifully distributed through the Canary Islands as madder. It will soon be ascertained that they can be made to produce cochineal equally well. In the province of Murcia, another colouring plant is also grown, namely, the *Anchusa tinctoria*, which vegetates particularly well along the maritime coasts.]
- 146 ———, D., *Valladolid*.
Sumach (*Rhus*) from Torrelebaton.
- 147 MARCOS (D. JULIAN), *Valladolid*.
Extract of madder.
- 148 THE AGRICULTURAL BOARD OF SARAGOSSA.
Vegetable dyes, from cultivated and wild plants:—
1 "Alazor" (*Carthamus tinctorius*). 2 Madder. 3 Sumach. 4 "Pastel" blue. 5 "Gualda" (*Reseda luteola*). Dyer's weed.
[*Pastel* is the colouring pulp extracted from the plant *Isotia tinctoria*. It is cultivated throughout the

whole province of Saragossa, which has sent a specimen of this pulp, as prepared for the blue dye of stuffs. Adverting to this blue colour, we may mention that the southern provinces of Spain present large tracts of country in which indigo might be raised with advantage. Some attempts of this kind have actually been made at Seville, and have succeeded very well.]

149 CRUZ (D. J. DE LA) *Canary Islands*.
Specimens of cochineal.

150 MERON (D. ENRIQUE), *Malaga*.
Specimens of cochineal.

151 ALCAIDE (D. MIGUEL GOMEZ), *Malaga*.
Specimens of cochineal.

152 CALDERON (D. JUAN MANUEL), *Granada*.
Hemp (*Cannabis sativa*) raw and combed. Flax (*Linum usitatissimum*). Flax and hemp seeds.

153 The MUNICIPAL CORPORATION, *Castellon*.
Samples of raw hemp.

154 ———, D., *Murcia*.
Linseed. Cleaned hemp.
Rush (*Macrochloa tenacissima*), of spontaneous growth.
Fibre called *Pita*, of the *Agave Americana*; also of spontaneous growth.
Samples of hemp, unbroken and cleaned.

[*Pita* is the name of a species of hemp-like filament, or fibre, obtained from the American agave (not the aloe), and is raised in Murcia. This plant is abundantly diffused over the entire southern coast of Spain, and may become the staple of a great department of material industry. The present price realized by it is 48 reals the arroba. It is employed in the manufacture of rope, and certain other coarse tissues. The art of preparing the raw material is still very little advanced in Spain, into which new species of this plant, and of other varieties of the same family, might very easily be introduced from America.

Esparto is a name given in Spain to the herbaceous stalks of the *Machraea tenacissima*, a plant peculiar to the arid wastes of different regions, and in very general use for the making of mats, sandals, cords, &c., and which may become of much greater importance when the art shall be discovered of extracting the finer fibres for other uses, and of employing the entire plant, reduced to pulp, for the finishing of paper, cardboard, &c. There are two varieties—perhaps, indeed, two species of *esparto*, commonly distinguished by their relative fineness. The specimens that have been sent from Spain come from the provinces of Huesca, Murcia, and Almeria. The trade in this textile article would seem to have engaged the attention of the Spanish Government during some epochs of the last century; for we have found several "Ordouances" of the years 1783, 1784, and 1790, prohibiting the export of this material out of the kingdom.]

155 ———, D., *Saragossa*.
Hemp from Calatayud, raw and cleaned.
Flax, from Borja.

156 MARTINEZ, D. PASCUAL, *Valencia*—Manufacturer.
Samples of hemp cordage.
Thread for sail-making.

Sail-cloth, best quality.

Cotton stuff, *colonina*, second quality.

[Cotton has yielded very abundant crops in Spain, especially on the coast of Andalusia, at Mabrill. During the War of Independence, this circumstance proved highly advantageous to Catalonia, which could then command no other supplies for her manufactures from remoter quarters. But the lands on which this cotton has been raised have become exhausted by its continuous cultivation in successive years without manures. The consequence is, that this cultivation of cotton has been given up, for the plant had become too deteriorated for the crop to pay the expenses of growing it. The relations established between Spain and America have almost entirely changed the economic conditions of this product, though its culture is, at present, to some extent, reviving in Seville, from which province the specimens in the Exhibition have been furnished.]

157 SAGRA (RAMON DE LA), *Madrid*.

Vegetable and textile products from the Island of Cuba:—

1 Trunk of the plant *Logetta linearis*, showing the textile substance of the interior liber.

[The lace-bark tree is thus called because the films of the inner bark are so tough and so easily separable that they may be stretched laterally till they form a network of great delicacy and beauty. The films being, moreover, arranged in very numerous layers, which are also separable, a small piece of the branch of the tree will produce a large quantity of this natural lace.—J. L.]

2 Large piece of the interior liber of the same.

3 Cord made from the sub-cortical fibres of the same. This cord is preferred to all other kinds in the Island of Cuba on account of its great tenacity.

4 Cord made from the textile fibres of the leaves of the palm.

5 Mat made from the same substance.

6 Cord made from the textile fibre of the tree called Majagua (*Paritium elatum*, Rich.); much used in the island.

7 Yarn, extracted from the senegal hemp (*Hibiscus cannabinus*); acclimated in the Botanical Garden of the Havana.

8 Cord made from the same yarn.

[In order to supply some idea of the fibrous products furnished by the Spanish colonies, certain specimens from botanical collections made in the island of Cuba, have been transmitted from Spain to the Exhibition. "During our long sojourn in that island," writes M. Ramon de la Sagra, "we recommended the cultivation and industrial improvement of a great number of plants hitherto much neglected, and more especially of those composing the section of *Monocotyledons*, whose textile, long, silky and resisting fibres are drawn from the leaves, and not from the stalk or the bark." In reference to this subject we have instanced various species of the "pita," which it would be easy to introduce from the continental coast of Guatemala* and of Columbia.† These are known under the names of "Cabulla," "Cocaiza," &c. Some species of the *Bromelia* and of the *Fourcraea* supply, also, excellent fibres; and all the leaves of the palm-tree, in this respect, may be advantageously made use of. We have sent some specimens of this class to the Exhibition, as well as of the *Paritium elatum*, of the *Hibiscus cannabinus*, and of the curious corticular coats peculiar to the

* Memoirs of the Agricultural Institution of Havana, 1834.—(*Memorias de la Institucion Agronoma de la Habana, &c.*)

† "La Cste ferme," &c. The old "Spanish Main."

Lagetta linteoria, or lace-wood (*Bois dentille*), of the island of Cuba. From *Puerto Rico* have been despatched flatures of the banana-tree, one species of which has been already acclimatized on the southern coast of Spain, where its cultivation may be much extended as a textile plant of extraordinary importance.

The Philippine Islands have supplied, among their beautiful embroideries, some samples of a delicate fibre, under the designations of "*Pina*," of "*Jusi*," and of "*Bejuca*," which they employ for the fabric (*tissage*) of their very fine stuffs. It is unfortunate that we are in want of information of a sufficiently precise nature upon the true species of plants that produce such precious textile fibres.—R. de S.]

158 ———, D. *Huesca*.

Vegetable productions used in manufactures:—

- 1 Bush (*Macrochloa tenacissima*). 2 Flax (*Linum*).
3 Hemp (*Cannabis sativum*).

[*Macrochloa* is, properly speaking, a grass, not a rush.]

159 PINAN (JUAN), *Leon*.
Flax, uncombed.

160 VINAS, ANDRES, *Puerto Rico*.

Fibre, from the trunk of the plantain tree, in its raw state (*Musa sapientum*).

161 HERAS (D. PERFECTO DE LAS), *Segovia*.

Raw flax; flax combed.

[Flax is cultivated in many departments of Spain; but specimens have been received from five of them only. The countries most rich in this culture, such as Galicia, the Basque provinces, and others, are not represented in this branch of the Spanish collection.

The value of the various descriptions in the collection varies very much, according to the good or bad heckling they have received. The flax of Borja, in the province of Saragossa, is very white and fine, and of extreme tenacity, sells, in its rough state, at 60 reals the Arragon arroba. The Iberian peninsula might be made to yield an immense production of flax; and, when the processes of its cultivation shall be more improved, she will, doubtless, furnish the finest qualities of this plant in profusion.

Hemp might be produced in Spain as generally as flax, but hitherto its cultivation has been but little extended. The collection in the Exhibition presents some magnificent specimens of hemp, the growth of Grenada, in its natural state; and also of some very remarkable dressed hemp, from the same district, as well as from Valencia, Segovia, and Murcia. More than 60,000 arrobas weight of these qualities are raised, and are for the most part consumed, in the manufacture of sail canvas.

162 VILLARS (JULIAN B.), *Seville*.
Raw cotton, growth of the province of Seville.

163 RIPALDA, the COUNT of, *Valencia*.
Combed hemp.

164 ———, D., *Almeria*.
Common olive oil.

[The oils of Spain are more celebrated for their abundance than for their quality; but this circumstance is the result, exclusively, of the methods of their fabrication, which are kept up by the taste of the people—fond of mucilage—and by the dearness of all the means of land carriage; for these will not admit of any expenses being

incurred in the preparation of native commodities which their selling price, in the trade, will not reimburse. But nothing would be more easy than for the Spanish oil producers to obtain good clarified oil, without any mucilaginous or empyreumatic flavour. Their olives are, intrinsically, excellent; and there are some kinds of them from which the fruit exudes, even without any pressure, the most delicious oils. In the Exhibition there are many specimens from different regions of Spain, and of very various value. That of Malaga, after undergoing filtration, is valuable proportionately in the same way as the refined oils of Valencia. This branch of the national industry has of late years received many ameliorations. The gathering and the choice of olives are better managed: the introduction of the hydraulic press permits a rapidity of elaboration that prevents the fermentation of the piled-up fruit; and the various qualities are conveniently classed. But the means of land carriage are still wanting. There is a vast consumption of oil in Spain, oil being an almost universal condiment with her people, and entering into the manufacture of soap, besides being required for the purposes of public and private lighting. Notwithstanding these several demands, however, the production greatly exceeds the consumption, and therefore requires suitable exterior channels for its more carefully prepared and purified products. When these channels shall be provided, the cultivators will realize those advantages that at present fall to the share exclusively of the factors at Marseilles. But the first object to be obtained for the cultivators is to facilitate the means of transport for their oils.

Other oils are manufactured in Spain, from walnuts and linseed, for consumption in the interior. The specimens of the former in the Exhibition are from the province of Oviedo.]

165 ———, D. *Cordova*.

Olive oil, produced from the wild olive.

166 ALVAREZ CALLEJA, D. S. *Villaviciosa, Oviedo*—
Apothecary.

Nut oil.

167 MONTESINOS (D. C. J.), *Badajoz*.

Olive oil from Albuquerque.

168 ZAYAS (JOSÉ), *Vega, Granada*.

Olive oil, from the village of Niguélas.

169 FERNANDEZ (D. M.), *Malaga*.

Olive oil, filtered.

170 ———, D., *Murcia*.

Linseed oil, made in Lorca. Liqueurice.

171 ———, D., *Seville*.

Olive oil, of the best quality, made in the province.

172 DIEZ DE RIBERA, ANTONIO, *Santa Fé, Granada*.

- 1 Olive oil.
2 Cleaned hemp.

173 THE BOARD OF AGRICULTURE, *Valencia*.

Olive oil of two qualities, produced by D. Vicente Tortosa; olive oil, produced by D. José Carrascosa.

174 THE COUNT OF SOBRIADIEL, *Saragossa*.

Olive oil.

176 ENRIQUEZ (D. JUAN NEPOMUCENO), *Velez Malaga*.

Refined sugar, from the cane grown in the neighbour

hood of Malaga. Established at Torre del Mar, 1846, by M. Ramon de la Sagra.

["The history of the cultivation of the cane," M. de la Sagra observes, "and of the elaboration of its juices into sugar, in Spain, is extremely curious. We ourselves collected some notices, and published several memoirs, on this subject, at a period when we were occupied in the introduction of new processes, and steam machinery, for the improvement of this important branch of Spanish industry, on the coast of Andalusia. Since that time these perfected processes have so extended themselves that that beautiful country now produces white sugar of an excellent quality. The cultivation of the cane is making rapid progress. One single factory, that of the *Torre del Mar*, which was established by ourselves in 1846, has sent to the Spanish collection a specimen of its refined sugar. From the result of calculations made by us, when traversing the shores of Andalusia, in 1845, it appears that irrigated lands (*terreins d'arrosage*), where the cane can be cultivated, may be made to yield an annual crop of 25,000,000 kilogrammes (535,714 cwt.). The cane succeeds perfectly, and the mode of its cultivation leaves nothing to be desired. The species employed are the creole variety, and that of Tahiti. The former of these was actually imported from the coast of Andalusia, into the Antilles themselves, at the close of the 15th century."]

177 ALVARGONZALES, D. R., *Oviedo*.
Preserved fruits and sweetmeats.

178 ———, D., *Huesca*.
Chocolate. Cheese.

[It is a cause of regret that these important branches of rural economy are in a very backward condition. The nature of pastures of Spain communicates to the milk of the animals that are fed upon them, whether the cow, or the sheep, or the goat, the most remarkable properties. The richness of some of the milk in question for the making of butter is truly astonishing. But our dairy farmers are wholly ignorant of processes that are so commonly employed elsewhere in this department of their business. The introduction of some Flemish, Dutch, or Swiss families into the farms of Spain has become matter of absolute expediency; and these people, by merely instructing their Spanish neighbours in the art of keeping their butter and their cheese, might realize considerable profits.]

179 MARTINEZ (D. SERAFIN), *Vitoria*—Manufacturer.
Sweetmeats made from different fruits.

179A ZULUELA, D. JULIAN, *Havannah*.
Samples of sugar.

180 MOLINA (D. ANTONIO), *Ciudad Real*.
Virgin honey, from El Moral de Calatrava.

181 ABAD, D. MANUEL, *Cordova*.
Honey of orange flowers.

182 COLMENERO, D. F. and J., *Guadalajara*—Producer.
Honey in the comb and clarified.
White and yellow wax.

[Wax and honey are both abundant and excellent. The variety of aromatic plants of the family of *Labiaceae* (thyme) furnish the bees with ample materials for the elaboration of their useful toils. The description of honey

called "azular," because it is furnished by bees which extract the pollen, and the saccharine principle of the nectars of the orange blossom is celebrated both at Seville and at Cordova. The honey of Huelvas, which is gathered in the village of Hinojos, and constitutes the principal branch of the riches of that country, is very valuable. In the same district they carry on a trade in wax to the value of 8,000 livres per annum.]

183 ESCUDERO, D. C., *Guadalajara*—Producer.
Honey in the comb.

184 CENTENERA, E., *Guadalajara*—Producer.
Honey in the comb.

185 BENJÛMEA (D. JOSÉ MARIA), *Seville*.
Honey "from orange flowers."

186 The AGRONOMICAL CABINET of the BOTANICAL GARDEN, *Madrid*.
Specimens of woods, in Number 225, employed for furniture and ornaments, the produce of the island of Cuba.

186 *List of Woods employed in the Island of Cuba for construction and other purposes. Sent from Madrid.* (Taken from the Botanical Section of the Natural and Political History of the Island of Cuba, by M. RAMON DE LA SAGRA.)

Abey macho (*Jacaranda Sagrana*, D. C.)
Abey hembra (*Pappigia excelsa*, Rich.)
Acana (*Sideroxylon pallidum*, Spr.)
Agracejo (*Ardisia cubana*, Alph. D. C.)
Agracejo carbonero (*Escecaria?*)
Aguedita (*Pierammia pentandra*, Sw.)
Almendro (*Laplacea Curtiana*, Rich.)
Almendro silvestre (*Dipholis salicifolia*, Alph. D. C.)
Ararà (*Bucida buceras*, Lin.)
Arbol del cuerno (*Acacia cornigera*, Lin.)
Ateje hembra (*Cordia Valenzuelana*, Rich.)
Ayua amarilla (*Zanthoxylum bombacifolium*, Rich.)
Ayua macho (*Z. lanceolatum*, Poir.)
Ayua hembra (*Z. Juglandifolium*, D. C.)
Azucarero de montaña (*Iceia Hedwigia*, Rich.)
Bagà (*Anona palustris*, Lin.)
Baria (*Cordia gerascanthoides*, Kunth.)
Bijaguara (*Colubrina ferruginea*, Brong.)
Boniato amarillo (*Nectandra boniato*, Rich.)
Biniato blanco (*Oreodaphne? alba*, Rich.)
Brasil (*Casalpinia bijuga*, Sw.; *C. horrida*, Rich.)
Brasilete colorado (*Casalpinia crista*, Lin.)
Bucàre (*Erythrina umbrosa*, Kunth.)
Cabo de hacha (*Trichilia spondioides*, Jacq.)
Caja (*Schmidelia nervosa*, Rich.)
Caimito (*Chrysophyllum cainito*, Lin.)
Caimitillo (*C. microphyllum*, D. C.)
Canela blanca (*Canella alba*, Murray.)
Caoba (*Swietenia mahagoni*, Lin.)
Carne de doncella (*Byrsonima lucida*, Kunth.)
Cedro (*Cedrela odorata*, Lin.)
Ceiba (*Eriodendron anfractuosum*, D. C.)
Ceibon de arroyo (*Pachira emarginata*, Rich.)
Chicharron (*Chicharronia intermedia*, Rich.)
Cigua (*Nectandra cigua*, Rich.)
Ciguaraya (*Trichilia Havanaensis*, Jacq.)
Ciruelo (*Spondias purpurea*, Lin.)
Cocuyo (*Brunelia nigra*, Sw.)
Copal (*Iceia copal*, Rich.)
Copsy (*Clusia rosea*, Lin.)
Cordoban (*Miconia pyramidalis*, D. C.)
Cuaba amarilla (*Amyris maritima*, Jacq.)
Cuaba blanca (*A. sylvatica*, Jacq.)
Cuanjani (*Cerasus occidentalis*, Lois.)
Cùrbana, v. Canela blanca.
Dagàme (*Calycophyllum candidissimum*, V.)

- Daguilla (*Lagetta linearia*, Juss.; *L. Valenzuelana*, Rich.)
 Ebano (*Diospyros*?)
 Encina (*Quercus*?)
 Frijolillo (*Lonchocarpus latifolius*, Kunth.)
 Fustete (*Broussonetia tinctoria*, Kunth.)
 Gia blanca (*Casearia alba*, Rich.)
 Gia brava (*C. ramiflora*, Vahl.)
 Goso (*Comocladia dentata*, Jacq.)
 Goso de costa (*Rhus metopium*, Lin.)
 Granadillo (*Brya ebenus*, D. C.)
 Guacima amarilla (*Luhea platyptala*, Rich.)
 Guacima baria (*Xylopiya cubensis*, Rich.)
 Guacimilla (*Celtis macrophylla*, Kunth.; *C. laevigata*, Wild.)
 Guacimilla de costa (*Prockia crucis*, Lin.)
 Guaguaci (*Lætia apetalata*, Jacq.; *L. longifolia*, Rich.; *L. crenata*, Rich.)
 Guamà (*Lonchocarpus sericeus*, Kunth.)
 Guamà de costa (*Malvacea*?)
 Guana (*Malvacea*?)
 Guara (*Cupania glabra*, Sw.; *C. tomentosa*, Sw.; *C. crenata* and *C. triquetra*, Rich.)
 Guara colorada (*Cupania macrophylla*, Rich.)
 Guavico (*Xylopiya obtusifolia*, Rich.)
 Guayabo agrio, G. silvestre, and G. cotorrero (*Psidium pomiferum*, Lin.)
 Guayabillo (*Eugenia guayabillo*, Rich.)
 Guayacan (*Guaiacum officinale*, Lin.)
 Guayacancillo (*Guaiacum verticale*, Ortega.)
 Guimbà, v. Guavico.
 Guira cimarrona (*Crescentia acuminata*, Kunth.)
 Guira criolla (*Crescentia cujete*, Lin.)
 Hueso (*Drypetes alba*, Poit.)
 Jaboncillo (*Sapindus saponaria*, Lin.)
 Jagua (*Genipa Americana*, Lin.)
 Jaguey hembra (*Ficus*?)
 Jaguey macho (*Ficus populnea*, Wild.)
 Jibà (*Erythroxyllum brevipes*, D. C.; *E. obtusum*, D. C.; *E. Havanaense*, Jacq.; *E. alaternifolium* and *E. rufum*, Rich.)
 Jiqui, v. Cocuyo.
 Jobo (*Spondias lutea*, Lin.)
 Jucuma (*Dipholis salicifolia*, Alph. D. C.)
 Jucaro (*Bucida capitata*, Vahl.)
 Laurel amarillo, v. Boniato amarillo.
 Laurel blanco (*Oreodaphne? alba*, Rich.)
 Laurel de cuabal (*Anona bullata*, Rich.)
 Lengua de vaca (*Egiphila Martinicensis*, Lin.)
 Leviza, v. Laurel blanco.
 Lloron (*Melania lucida*, Rich.)
 Maboa (*Cameraria latifolia*, Jacq.)
 Macurige (*Cupania oppositifolia*, Rich.)
 Maco (*Drypetes glauca*, Vahl.)
 Majagua (*Paritium elatum*, Rich.)
 Majagua de Cuba, v. Guamà.
 Majagua macho (*Belotia grewiaefolia*, Rich.)
 Malagueta (*Eugenia pimenta*, D. C.; *E. Valenzuelana*, Rich.)
 Manajù (*Malpighia*?)
 Mangle blanco (*Avicennia tomentosa*, Jacq.)
 Mangle colorado (*Rhizophora mangle*, Lin.)
 Moruro (*Acacia arborea*, Wild.)
 Moruro de costa (*Acacia litoralis*, Rich.)
 Mora (*Morus celtidifolia?* Kunth.)
 Nogàl (*Juglans cinerea*, Lin.)
 Ocuje (*Calophyllum calaba*, Jacq.)
 Palo blanco (*Simaruba glauca*, D. C.)
 Palo cachimba, v. Vibona.
 Palo de Caja, v. Caja.
 Palo carbonero, v. Agracejo carbonero.
 Palo santo, v. Guayacan.
 Poralejo (*Malpighia*?)
 Pico de gallo (*Cynometra cubensis*, Rich.)
 Pimienta, v. Malagueta.
 Pino (*Pinus occidentalis*, Sw.)
 Quiebra hacha (*Copaifera hymenæefolia*, Moric.)
 Ramon (*Trophis Americana*, Lin.)
 Raspa lengua (*Casearia hirsuta*, Sw.)
 Roble amarillo (*Citharexylum caudatum*, Lin.)
 Roble blanco (*Tecoma leucoxydon*, Mart.)
 Roble guayo (*Ehretia Bourreria*, Lin.)
 Roble negro and Roble prieto (*Ehretia tinifolia*, Lin.)
 Sabicù (*Acacia formosa*, Kunth.)
 Sangre de doncella, v. Carne de doncella.
 Sapote (*Sapota achras*, Mill.)
 Sapote de culebra (*Lucuma serpentaria*, Kunth.)
 Sapote negro (*Diospyros laurifolia*, Rich.)
 Torcido (*Mouriria Valenzuela*, Rich.)
 Tengue, v. Moruro.
 Ubero de playa (*Coccoloba uvifera*, Jacq.)
 Vaca-buey (*Curatella Americana*, Lin.)
 Vibona (*Erithalis pentagonia*, D. C.)
 Vigueta de Naranjo (*Ilex cassine*, Aiton.)
 Viriji (*Eugenia ferruginea*, Rich.)
 Yaba (*Andira inermis*, Kunth.)
 Yagruma macho (*Panax undulata*, Aub.)
 Yaimiqui, v. Carne de doncella.
 Yaicuage (*Hypelate paniculata*, Cambes.)
 Yaiti (*Excocaria lucida*, Sw.)
 Yamào (*Guarea trichiloides*, Lin.)
 Yana (*Ximenia Americana*, Lin.; *Conocarpus erecta*, Kunth.)
 Yanilla (*Schmidelia Comminia*, Sw.)
 Yaya (*Uvaria neglecta*, Rich.; *Oxyandra virgata*, Rich.)
 Yaya cimarrona (*Mouriria myrtilloides*, Poiret.)
 Yayajabico (*Colubrina reclinata*, Brong.; *Erithalis fruticosa*, Lin.)
- 187 The ECONOMICAL SOCIETY of MANILLA.
 Collection of 213 different species of wood growing in the Philippine Islands.
 Collection, in three frames, of the different qualities of tobacco-leaf employed in the Government factories in Manila and other places. The leaf of Cagayan is the only one manufactured for exportation.
- 188 GUINART (D. JUAN), *Seville*—Manufacturer.
 Corks and bungs.
 [Three provinces of Spain have sent to the Exhibition cork in the slab, and worked up into corks—namely, Gerona, Huelva, and Seville. In the first enumerated of these provinces, the cork trade is a very considerable one. The species of oak which produces the cork vegetates, freely, over the whole of the coast district, and over the versants or faces of the Pyrenees.]
- 189 ———, D., *Gerona*.
 Cork, in sheets, and manufactured articles.
- 190 CASTELLS (D. JOAQUIN), *Esparraguera*—Manufacturer.
 Specimens of sail-cloth.
- 191 The ROYAL ARSENAL, of CARTAGENA, *Murcia*—Manufacturers.
 Rigging. Sail canvas.
- 192 ESCUDERO & AZARA, *Cerevera del Rio Alhama, Soria*—Manufacturers.
 Sail-cloth, woven in hand-loom.
- 192a BERENGUER, D. J. B., *Valencia*—Producer.
 Specimens of cochineal.
- 193 ORTEGA Y SOLER, D. F., *Ferrol, Corunna*—Manufacturer.
 Specimens of linen from the manufactory of Isabella II. Canvas, &c.

194 THE CORPORATION OF CASTELLON—Manufacturers.
Hemp sandals. Mule furniture. Linens.
Cables. Cordage. Lashings. Pack thread.

195 THE BARON OF FINESTRAT, *Alicante*.
Skein of silk.

196 CRUZ, S., *Santa Cruz de Tenerife, Canary Islands*.
Silk from the *Marselles* worm.
Silk from the *Trevoltino* worm.
Silk from both the former, crossed.

197 PUJALS, D. FRANCISCO, *Valencia*—Producer.
Skeins of silk, of 4, 5, 6, and 7 cocoons.

198 GONZALEZ, D. SALVADOR, *Valencia*—Producer.
Skeins of silk, of 4, 5, 6, 9, and 14 cocoons.

199 ———, D., *Murcia*.
Silk-worm gut, for fishing.
Silk-worm gut, first and second qualities.

200 ALMANSA, D. DAMIAN, *Murcia*.
Silk.

201 CRUZ (D. J. DE LA), *Santa Cruz de Tenerife*.
Silk. Cochineal.

[The Nepal cultivation of the cochineal insect has been extensively diffused in Spain of late years. It had long been assumed, and experience has since ascertained, that the sandy and almost barren regions which skirt some parts of the Mediterranean coasts of Spain would be admirably adapted for this object. Subsequent experiments and results have been conducted in many different localities. At the Exhibition there will be found specimens of this product from Valencia, from Alicant, from Malaga, and from the Island of Tenerife, and Canaries.]

202 MONTFORT, F., *Torrente del Cinca*—Producer.

- 1 Four skeins of silk produced in the district.
- 2 Silk from the worms, called *trevoltinos*.
- 3 Silk from the worms called *de Raiko*.
- 4 Silk from the worms called *de Turquía*.

203 ———, D., *Murcia*.
Skeins of spun silk, of the kinds called *candongo*, *medio conchal*, and *conchal*.
Warp of double-spun silk (called *capillejo*).
Skein of spun silk, á la Piedmont.
Another skein, round.

204 MARGARIT (D. JOSÉ), *Barcelona*—Manufacturer.
Spun silk.

205 GARCIA (D. JOSÉ), *Murcia*—Manufacturer.
Specimens of spun silk worked on the Arabian system.

206 FERRER & Co., *Roda, Barcelona*—Manufacturers.
Line flax and silk thread.

207 REY & Co., *Talavera*—Manufacturers.
Spun silk.

208 MONTFORT (D. FRANCISCO), *Torrente del Cinca*,
Huesca—Manufacturer.
Silk thread.

209 BOARD OF AGRICULTURE, *Valencia*—Manufacturers.
Spun silk.

210 TRENOR (D. TOMAS), *Valencia*—Manufacturer.
Specimens of spun silk.

211 REYNOSO (D. MIGUEL), *Valladolid*—Manufacturer.
Spun silk.

212 GINER (D. JOAQUIN), *Villa Real, Castellon*—
Manufacturer.
Specimens of spun silk.

213 ALCALÁ (the Widow), & SON, *Talavera*—Manu-
facturers.
1 Silk thread. 2 Silk stuffs.

214 ORDUNA, D. VICENTE, *Valencia*—Manufacturer.
Samples of silk stuffs viz.:—
Various colours, for draperies.
Brocatel, superior double shot.
Dress pieces of Chinese and damasked gros.
Brocatel, single shot.
Velvet of various colours.
Waistcoats of figured velvet, of different colours.
Damasks—velvets, square pattern.

215 DOTRES, GASPAB, & Co., *Valencia*—Manufacturers.
Samples of spun silk, viz.:—
White silk, from four, six, and seven cocoons.
Yellow silk, from five, seven, and eight cocoons.

[The collection of the raw or reeled silks of Spain merits the attention of manufacturers and merchants, as being of excellent quality. The common kinds, reeled after the old manner, are employed in finishing up the silk stuffs of Malaga, Valencia, and Talavera, so celebrated for the solidity of their textures and the permanency of their colours. The new steam processes are everywhere extending themselves; the greatest attention is paid to the worms and to their nurture; to the introduction of precocious varieties; to different collections; to the reeling by four and five cocoons; all these are innovations generally adopted now, and to which agricultural associations and two enlightened and zealous followers among the silk growers, have given a vast development of late years. Owing to these exertions, the silk-works of Catalonia, Valencia, and Murcia have been able, of late years, to introduce great improvements into their textures; employing, at the same time, the native silk of the country—a circumstance this, moreover, which allows them to sell their products at very moderate prices. The value of the silks in the Exhibition varies with their quality. There are some from Valencia, reeled from 4, 5, 6, and 7 cocoons, valued at from 64 to 70 reals per lb.; or from 26 to 38 francs (11. 1s. 8d. to 11. 11s. 8d.) the kilogramme; and others, between 80 and 86 reals, or 40 and 42 francs.

The manufactory of the present exhibitors is very considerable; it employs a large steam-engine, and produces, in ten months of the year, 18,000 lbs. of silk, or very nearly 9,000 kilogrammes. It gives employment to 170 women and young girls, and uses no other silk than that of the country. M. Montfort, a zealous and active producer, to whom this branch of industry is much indebted, has forwarded from Torrente del Cinca, where he has established his "magnaneries," some magnificent skeins of silk obtained from the Trivoltin worm, and of silk, from worms of the Kaiko race, and of Turkey. Alicant, Palentia, Barcelona, Castillon, Valladolid, exhibit also some rich specimens. The province of Murcia, which still retains the ancient processes, has sent some

specimens obtained by reeling after the Arab manner, of three varieties. There are other specimens of silks, obtained by the same processes, and of a series spun after the Piedmontese manner: the collection contains some samples from the Canary Island, where this sort of trade is progressing very advantageously. These silks are the produce of the Trivoltin, crossed with the annual worm, and nourished upon the leaves of the *Mora multicaulis*.]

216. ROIG (D. JOSE), *Barcelona*.
Specimen of silk stuff, called "Christus."

217 AMIGO Y SAURY (D. RAYMUNDO), *Barcelona*—
Manufacturer.
Pieces of silk stuff for umbrellas.

218 CASTILLO, D. M., *Seville*—Manufacturer.
Specimens of silk stuff.

219 MANUFACTURING COMPANY OF THE GUILDS,
Talavera and Ezcaray—Manufacturers.
Silk and gold stuffs.

220 CALDERON (D. JUAN MANUEL), *Granada*—
Manufacturer.
Specimens of spun silk.

221 FITER, J., *Barcelona*, Manufacturer.
Blonds; large kerchief of black blonde with flowers;
mantilla of black blonde. Black and white blonde veils.

222 FITER, J., *Barcelona*.
Dress and shawl of black blonde, with coloured flowers.

223 MARGARIT and ENA, *Barcelona*—Manufacturers.
Scarf of black lace.
Dress, composed of skirt, body, sleeves, &c.
Veil of white blonde.
Mantilla of black blonde.
Mantilla of satin with black blonde.

224 MUNICIO (D. VICENTE), *Casla, Segovia*.
Specimens of wool.

225 MONTERO (D. SEBASTIAN), *Seville*.
Samples of fine wool, unwashed.

226 ———, D., *Huelva*.
Fine wool, from the flocks fed in the Sierra de Andevalo.

[It is much to be regretted that the collection of specimens of wools sent from Spain should not have been much more extensive; and, above all, that such a series should not have been arranged with a view of giving an accurate idea of our wools; a series at once topographical and industrial, which would have much facilitated the comparative study of such specimens with the beautiful and remarkable varieties that are obtained in other countries. But the collection is also deficient in specimens of the hair or pile of the goat, and more particularly of the goat of Thibet, which we continue to rear and tend with so much care in various localities. Spain might derive an immense profit from the adoption of improvements such as are demanded by the present condition of these branches of her national industry; but these improvements must be combined with a total agricultural revolution, which, in its turn, also, must mainly depend on a new system of

development—uniform, wisely digested, and pushed forward with great energy and perseverance, in the labours required on her public works, on her roads, bridges, lines of communications, enclosures, and irrigations. Foreign capital might here find employment as varied as it would be lucrative. Spain might derive no inconsiderable advantage, moreover, from a trade in the skins of rabbits and hares, which are exceedingly plentiful throughout her territory. One exhibitor has sent some specimens perfectly smooth, and denuded of hair by a mechanical process.]

227 The ECONOMICAL SOCIETY of TUDELA, *Navarre*.
Specimens of wool (called *churra*).

228 BARRASA (D. MARIANO), *Valladolid*.
1 White wool, washed. 2 The same, carded. 3 Brown wool, washed. 4 The same, combed.

["Our Spanish wool," observes M. de Sagra, "enjoys great celebrity, although this requires, perhaps, to be maintained by the adoption of more rational principles in the rearing of the sheep, the separation of flocks, the choice and crossing of breeds, the system of folding, depasturing, removals, &c. Spain has possessed, for centuries past, the beautiful Merino breed, which requires at this day the most special care in their treatment and management; for these animals, although they have lost nothing of their primitive vigour, seem to have gained little or nothing as to any improvement in the quality of their fleeces. A few zealous flock-masters, who are anxious to meet this deficiency, have forwarded to the Great Exhibition some samples of beautiful wools; but the series is neither so extensive nor so rich as might have been contributed. Long wools, particularly, which are of more or less value than some others of Spain, and appropriated for combing, are rare in this collection. There are some wools of these kinds grown, however, in Egea, province of Saragossa, whereof the sashes and cloaks (*ceintures et couvertures*) of that country are made. The qualities of the Segovia are most renowned. Some of the wool of Casla, and some of the Merino fleeces, with fine and short wool, are extremely valuable. These beautiful specimens are from the flocks of an exhibitor, who has assiduously devoted himself to the improvement of the merino races in Spain. He was the first to introduce, in that country, the custom of housing the sheep from the month of December to the beginning of June. The experiment appears to have been completely successful. The wool of the animals which are treated after this manner becomes much more fine; and the difference renders itself perceptible in those parts of the sheep which have not been covered with this natural clothing. M. Hernandez has forwarded to the Exhibition various fleeces of his sheep, some of which had been exposed to the direct action of all the atmospheric agencies, and the others protected under sheds, &c. The difference between the qualities of the respective wools is very great."

Conjointly with these improvements due to the enlightened zeal of individuals, we ought to mention the complete reform of our ancient legislation, which formerly accorded to the proprietors of herds and flocks monstrous privileges, opposed to agricultural progress and to the perfection of races. The laws of La Masta are abolished, and the fiscal regulations established in their stead are favourable to the introduction of foreign races, which are much required by the Spanish breeders for the purpose of crossing their own stocks.]

229 ———. D., *Saragossa*.

Black and white wool.
Black and white worsted, from Ejea.

230 HERNANDEZ, D. JUSTO, *Madrid*—Producer.

Black and white wool from Salamanca.

231 DELGADO (D. DOMINGO), *Saragossa*.

Hare and rabbit hair.

231A THE CORPORATION OF LUCENA, *Castellon*—
Manufacturers.

A fulled cloth mantle.

232 THE CORPORATION OF MOBELLA—Manufacturers.

Saddle-bags of canvas.
Travelling mantle.
Two sashes.

233 The ALCALDE of *Santa Maria de Nieva*,
Segovia—Manufacturer.

Coarse woollen cloth for winter clothing, of first and second quality.

234 The ECONOMICAL SOCIETY, *Manillas, Philippine Islands*.

Piece of 1½ yard broad "yloylo" stuff.
Various pieces, for a blouse.
Piece of "jusi," and a shawl of "jusi;" both worked.
These samples are products of the Bisayas Islands.

235 THE ECONOMICAL SOCIETY, *Manillas, Island of Luzon*.

An apron; four handkerchiefs; three camisets; four collars and cuffs; and two collars: embroidered in pine. One of the handkerchiefs remains on the frame in which it was embroidered. In a parcel, are the instruments used for cutting the filaments, &c.

Six dresses and six shawls, with checks and stripes: woven with "jusi."

Six cigar-cases, of different quality; crown of a hat; cluster of "bejuco;" seven small bunches of the filaments of bejuco.

Soap made from pure palm-oil.

236 SMITH, CONSTABLE, & Co., *Liverpool*, per
HAMMOND, W. P., & Co., *London*.

1 Embroidered Piña muslin dress from the Philippine Islands, manufactured from the fibre of the pine-apple, and embroidered by the Señora M^{rs} Marguerita of Manila.

2 Embroidered piña muslin handkerchiefs.

3 Pieces of striped jusi dresses.

237 GILART, ROSA DA., *Madrid*—Designer and
Manufacturer.

Shield of the royal arms of Spain, in silk, gold, and silver.

The baby-linen made for the late Prince of Asturias.

238 ———, Mrs. G. M., *Madrid*.

Embroidered shirt.

239 BESCANSA (FERMIN), *Corunna*.

Cream of tartar. Bitartrate of potash.

240 ZABALA (PEDRO VICENTE), *Vitoria*—Producer.

Schwreinford green. All the materials employed are of Spanish produce. Extract of aconite.

241 FLORES, CALDERON, & Co., *Burgos*.

Resins and spirits of turpentine.

[Resins, and the essence of turpentine, have been sent from the province of Burgos only, and the specimen of

resinous gum in the Spanish collection has been furnished by the plum and almond-trees of the province of Huesca.]

242 SANTO, Dr. D. AMBROSIO C., *Matanzas, Cuba*.
Chemical products.

242A CANALES (D. JOAQUIN), *Malaga*.

Essence of lemons, made by the exhibitor.

243 LEON Y RICO (D. EDUARDO DE), *Madrid*—
Producer.

Hard soap, made without the agency of heat.

244 GIRÓ (D. JUAN), *Malaga*—Producer.

Veined soap.

245 BERT (D. JUAN JULIAN), *Madrid*—Manufacturer.

Various acids. Stearine candles. Soaps.

246 BERT (D. JUAN), Director of the Light Manu-
factory—*Madrid*.

Stearine star-lights. Wax-lights and candles, of vegetable wax, or stearine prepared from oils. White oil-soap. Yellow oleine-soap.

[Stearine candles are made from the mixture of stearic and margaric acids, prepared from animal fats, which consist chiefly of stearine, margarine, and oleine, that is, compounds of the fatty acids (stearic, margaric, and oleic), and the sweet principle of oils (glycerine, sugar of oils). To obtain the fatty acids, the fat is boiled with lime, which combines with them, forming stearate, margarate, and oleate of lime; the glycerine remaining dissolved by the water is removed by washing; the lime-soap is then decomposed by hot dilute sulphuric acid, which combines with the lime, and liberates the fatty acids, which rise to the top. Oleic acid, being a fluid, is removed by pressure. Oleine soap is oleate of soda.—W. D. L. R.]

247 GOLFERICHS (PEDRO M.), & CUGAT, J. P.,
Barcelona.

Liquid gas, free from smell, and from smoke during combustion.

248 THE CENTRAL FACTORY OF TOBACCO, *Philippine Islands*.

Small box, containing ten small packets of cigarettes of the different kinds manufactured in the above factory of Manila.

Eight small boxes, containing cigars of the various forms and sizes manufactured in the same factory, with picked Cagayan leaf.

249 JAREN, D. JUAN A., *Havannah*—Inventor.

Various assortment of trusses.

249A VIGNAUX (D. LUIS JOSÉ), *Barcelona*—Manu-
facturer.

Curried skins, for bootmakers:—

1 Two calf-skins, tanned and curried; weight 20 lbs. of 12 oz. per dozen skins.

2 Two calf-skins, tanned and curried, same weight.

3 Two calf-skins, prepared for enamelling.

4 Two calf-skins, black-waxed on the under side, about 20 lbs. of 12 oz. per dozen.

5 Two calf-skins, of greater weight.

6 Pair of boot-legs, with their backs; first class.

7 Pair of boot-legs, middling quality.

8 Pair of boot-legs, for half-boots.

9 Pair of boot-legs, and upper leathers for mounting the same.

10 Pair of boot-legs, middling quality.



203.

TABERNACLE. SILVER GILT, INLAID WITH PRECIOUS STONES. SPAIN.

- Enamelled leathers, for shoes :—
- 11 Two enamelled calf-skins, for boots.
 - 12 Two enamelled calf-skins, first class.
 - 13 Two enamelled calf-skins, for ladies' shoes, prepared from the upper side.
 - 14 Two enamelled calf-skins, with the upper side.
 - 15 Two goat-skins, enamelled on the upper side, and grained.
- Glazed skins, for hatters :—
- 16 Twelve prepared sheep-skins, for hat-linings; white, lily, violet, flesh, sky-blue, sea-green, clear apple-green, chocolate, coffee, grey, yellow, and straw colour.
 - 17 Two prepared sheep-skins, black enamelled.
 - 18 Twelve hat-linings, glazed, of various colours and white.
 - 19 Two hat-linings, black enamelled.
 - 20 Coachman's hat, black glazed, large size.
 - 21 Coachman's hat, middling quality.
 - 22 Sedman's hat, large.
 - 23 Sedman's hat, small.
 - 24 Twelve sorted cap-fronts, of different kinds.
 - 25 Three flaps for cap-fronts, of different kinds.
- For saddlers and coach and harness makers :—
- 26 Large-sized ox-hide, grain-glazed, for coach.
 - 27 Middling-sized ox-hide.
 - 28 Superior calf-hide.
 - 29 Superior calf-hide, glazed on under side.
 - 30 Superior calf-hide, glazed on upper side, for collars and other articles of harness.
 - 31 Cow-hide, black glazed, thick.
 - 32 Cow-hide, black glazed, thin.
 - 33 Cow-hide, strong, white.
 - 34 Cow-hide, thin, white.
 - 35 Piece of hide, black glazed on both sides.
 - 36 Piece of hide, grey on one side and black on the other.
 - 37 Five sheep-skins, strong and of large size, grained, for coach-boxes; yellow, grey, purple, lily, and blue, glazed.
 - 38 Sheep-skin, crimson.
 - 39 Sheep-skin, black.
 - 40 Sheep-skin, glazed on under side, and strong.
 - 41 Goat-skin, black-grained upper side.
 - 42 Two imperiales, or head-pieces, for cavalry and artillery helmets.
 - 43 One imperiale, for infantry.
 - 44 Two vizors, for cavalry helmets.
 - 45 Two vizors, for infantry helmets.
 - 46 Pair of pistol-holsters.
 - 47 Fine black-enamelled goat-skin, for trimmings.
- [The skins of Spain are of a remarkable quality, especially those of goats and lambs. This branch of industry has assumed a much more extensive development with the glove manufacture, which now successfully contends with the French article.
- With regard to skins and hides for the purposes of boot and shoe-making, saddlery, &c., a manufacturer of Barcelona has provided an interesting collection of excellent qualities, and at moderate prices. In the present series may readily be recognized the progress which Spain has made in leather dressing within these last few years. The calf skins that are white tawed (or tanned), are so admirably dressed that their average weight does not exceed 20 ounces. The same manufacturer exhibits tilts or tarpaulings, perfectly tanned and varnished, and of great suppleness; sheep-skins (*amincias*), for the lining of hats; an assortment of skins for shakos, glazed skins, &c.]
- 249B ROIG, D. SALVADOR, *Barcelona*—Manufacturer.
Prepared fine skins, of various colours and gilt.
- 250 SOCIETY OF MANILLA.
The leaf of cagayan is the only one manufactured for exportation.

- 251 PARTAGAS & Co., *Havannah*.
Case of cigars, imported by A. G. Wiltshire, 2 Lime Street Square, agent to the exhibitor.
- 253 DEU (D. GREGORIO), *Barcelona*—Manufacturer.
Cards for weaving.
- 253A SASTRE, D. CASIANO, *Lorca, Murcia*.
Woollen cloth.
- 253B MENDEZ, D. J. J., *Lorca, Murcia*.
Woollen cloth.
- 253C CRUZ ARCAS, D. N., *Lorca, Murcia*.
Woollen cloth.
- 253D MORENO BROTHERS, *Antequera, Malaga*—Manufacturers.
Baizes.
- 253E TRUEBA Y CAMPO, *Santander*—Manufacturers.
Woollen cloth, from the factory at Renedo.
- 254 ALEMAN (D. PABLO), *Escaray*—Manufacturer.
Cards for weaving.
- 255 SASTACHS, J., *Barcelona*—Manufacturer.
Wire cloth. Specimens of the various kinds manufactured by the exhibitor. Pair of paper moulds.
- 256 BELMONTE (D. RAFAEL), *Navas Frias*—Manufacturer.
Two felt hats.
- 256A IBARRA (D. JOSÉ), *Placencia*—Manufacturer.
Various kinds of files.
- 257 CALLEJO (D. JOSÉ), *Madrid*—Manufacturer.
Locksmith's work made for the new building destined for the Congress of Deputies.
- 258 VILARDET & CALLEJAS, *Valladolid*—Manufacturers.
Kid and lambskin gloves.
- 258A BAECHES (D. ANTONIO), *Madrid*—Manufacturer.
Stirrups.
- 259 SANCHEZ PESCADOR (D. JOSÉ), & MIGUEL (D. TOMAS), *Madrid*—Manufacturers.
Bedstead of cast steel, with bronze ornaments, chased and gilt.
- 260 MIGUEL (D. JULIAN DE), *Madrid*—Manufacturer.
Iron bedstead, with ornaments of gilt brass.
Iron bedstead, with inlaid ornaments.
Bed-room stand, of iron, with inlaid ornaments.
- 261 MOBATILLA (D. FRANCISCO), *Madrid*.
Tabernacle, silver-gilt, inlaid with precious stones, weighing 2 quintals; made for the cathedral at Arequipa. This tabernacle is represented in the Plate 203.
- 262 ROYAL ORDNANCE OFFICE, *Oñate*—Manufacturers.
1 Howitzer of wrought-iron, 16-inch calibre, made at Oñate by the Carlists, during the last civil war in the Peninsula.
2 Mortar of wrought-iron, 9-inch calibre.
- 263 ROYAL CANNON FOUNDRY, *Seville*.
A long howitzer, 9-inch calibre.

264 ZULOAGA (D. EUSEBIO), *Madrid*—Manufacturer.

Case to contain a title nobility of Castille, of wrought-iron, with reliefs, incrustations, and Damascus-work of gold and silver.

264A ZULUAGA (D. EUSEBIO), *Eibar, Guipuzcoa*—Manufacturer.

Two pairs of pistols and two hunting knives, with their appurtenances, made of forged iron, highly ornamented and inlaid.

Cavalry sword, with figures, arabesques, &c., and damascened with gold and silver.

Two-barrelled gun, mounted in the English fashion.

Single-barrelled gun, mounted in the Spanish fashion.

A group of these objects is represented in the plate.

265 THE ROYAL ORDNANCE, *Placentia*.

An infantry percussion musket and bayonet.

266 THE ROYAL ORDNANCE, *Toledo*.

Nine sword and sabre blades—1st. For officers of artillery, inlaid, engraved, and gilt; 2nd. and 3rd. For officers of artillery, enamelled and damasked; 4th. Officer's sword-blade, engraved; 5th. Infantry officer's sword-blade; 6th. Cavalry officer's sword-blade, engraved, gilt, and enamelled, in the form of a serpent; 7th. An ancient cavalry sword-blade, engraved, enamelled, and coloured; 8th. A cavalry officer's sabre-blade, engraved; 9th. An infantry officer's sword-blade, with silver hilt, in form of a serpent's head.

Ancient halberd, engraved and gilt.

Dagger, enamelled and gilt, with sheath engraved and gilt.

Silver case, with sheath, in form of a serpent.

A group of these objects is shown in the plate.

[The trade of forging iron is of great antiquity in Spain, but the method of English casting (*la fonte Anglaise*) is very modern, dating only from 1832. Since that period many of these casting furnaces have been established; one at Barcelona, one at Sabadell, one at Tarresa, one at Matara, one at St. Felio, one at Ignalada, one at Vich, one at Rens, one at Figueras, three at Madrid, two at Valencia, one at Seville, one at Valladolid, one at La Corogna, one at Bilbao, one at Tolosa, one in Trubia. There are also four working factories and casting furnaces at Barcelona, and four others situated respectively at Maurreza, Madrid, Malaga, and Saragossa; besides all these, there are no less than eighteen iron-works and factories at Barcelona alone; at Sabadell, two; and at Tarraza, Villasar, Metaro, and Reus, one each. This enumeration will contrast, significantly, with the small number of metallurgical products sent to the Exhibition from Spain. Some judgment may be formed of the state of our manufactures of arms from the beautiful piece of bronze ordnance, weighing upwards of 3,000 kilogrammes, from the Royal Manufacture of Seville. The manufactory of Toledo supplies sword-blades, sabres, and knives of excellent quality. Some of these can be inserted into their scabbards in the twisted form of a snake. Two factories, the one at Placentia, the other at Elba, have furnished sets of files from 14 to 18 inches. Barcelona sends combs for tulle, silk, velvet, &c. From the same city, and from Escaray, cards for wool and cotton combing, made according to the processes which have been introduced at Liege. From Barcelona, also, some metallic gauzes; but none from Madrid. This article is applicable to the preparation of paper, whether made endless (or cylinder drawn) or by hand. One lockmaker only, M. Callejo, has transmitted specimens of his work, but from these an advantageous estimate may be formed of the condition of this branch of industry in Spain.]

267 YSASI (D. MANUEL DE), *Ordnance of Toledo*.

Sword of extraordinary temper and flexibility, with metallic scabbard, in the form of a serpent.

This sword is represented in the plate.

[It is related by the Greeks of the Lower Empire that the temper for the "admirable Persian sabre" was invented by the Indians, from whom the Persians borrowed it. Damascus became the chief seat of this industry, and, doubtless, it was through the Arabs that the knowledge of processes of Damascus travelled into Spain, and materially contributed to the success which, in this manufacture, her artisans for many centuries enjoyed. This Indian invention appears to have been the substitution of oil for water in the process of tempering. Yet Martial often speaks of the celebrity of his compatriot Aragonese in this art, and Pliny reports the like reputation of the inhabitants of Bilbilis and of Turiaso.—R. H.]

268 IBARZABAL, D. GABRIEL, *Guipuzcoa*—Manufacturer.

Two fowling-pieces.

269 ARETIO, D. CANDIDO, *Eibar, Guipuzcoa*—Manufacturer.

Two fowling-pieces.

270 MEDINA (D. MIGUEL), *Madrid*.

Secrétaire, with incrustation work.

This secrétaire is represented in the adjoining Plate 251.

270A GARATE, D. MANUEL DE, *Eibar, Guipuzcoa*—Manufacturer.

A six-barrelled pistol.

271 OPPELT (D. EMILIO), *Malaga*—Manufacturer.

Optical instruments.

271A PEREZ, *Barcelona*—Inventors, Designers, and Manufacturers.

An octagonal table of inlaid wood; the top consists of various designs, with the arms of Spain and England. It contains 3,000,000 pieces, the arms of England alone, in a space of 3 inches by 2, consisting of 53,000.

This branch of industry has been introduced by the exhibitors.

This table is represented in the Plate 73.

272 GALLEGOS (D. JOSÉ), *Malaga*—Inventor and Manufacturer.

Guitar-harp: a newly-invented instrument, which comprises the harp, guitar, and violincello.

This instrument is represented in the Plate 251.

272A SETTIER, D. BALTASAR, *Valencia*—Manufacturer.

Thirty-three samples of straw-hats.

273 CORT Y MARTI (D. PEDRO), *Madrid*—Inventor and Manufacturer.

Orthopedical apparatus. Lasts.

274 LEON (D. JOSÉ), *Madrid*—Manufacturer.

Artificial teeth.

274A SENA SORNI (D. FRANCISCO DE), *Valencia*—Manufacturer.

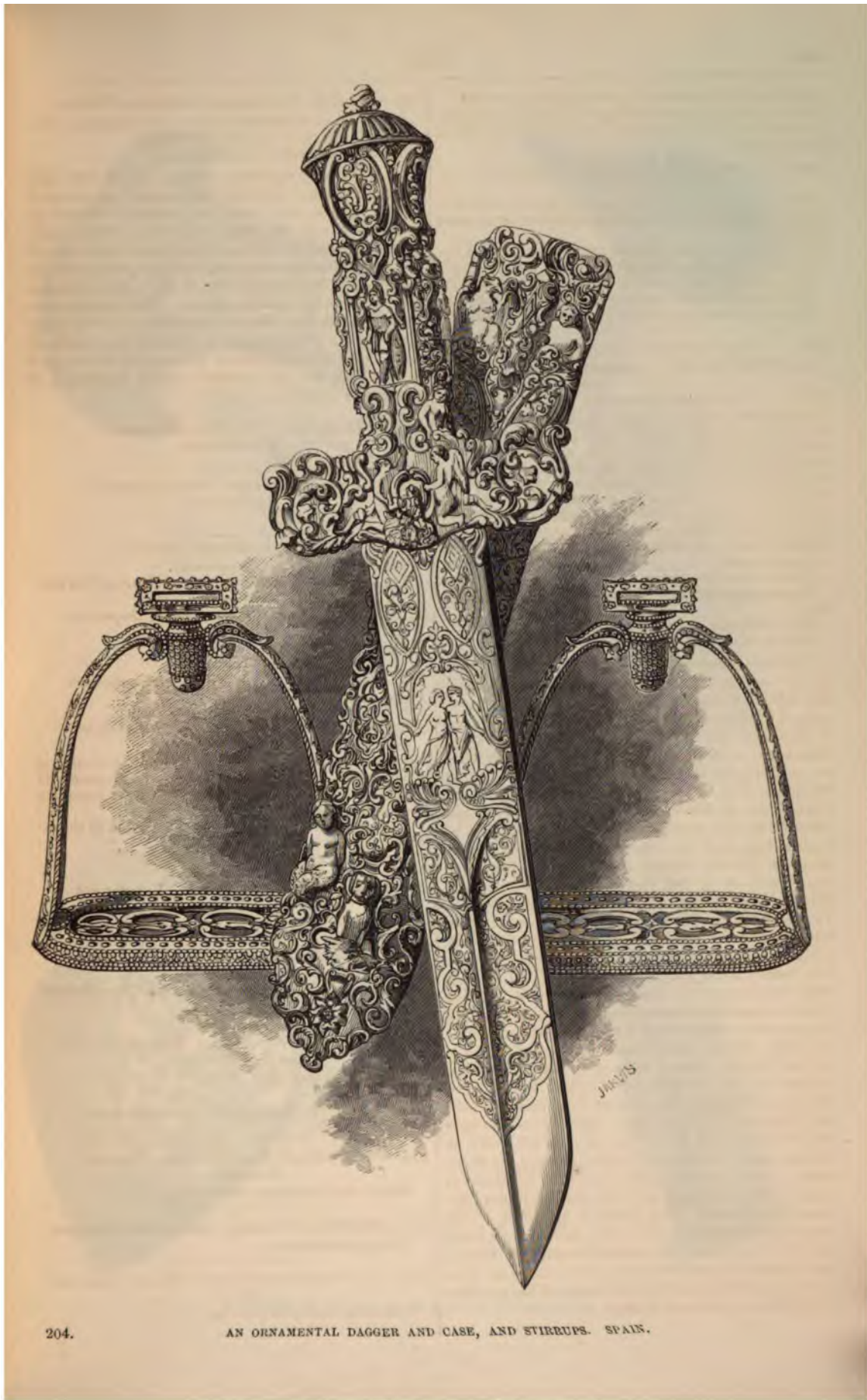
Ribbons for decorations and fringes.

275 YRABURU (D. GASPAS), *Madrid*—Manufacturer.

Various decorations.

275A THE ECONOMICAL SOCIETY, *Manilla (Island of Luzon)*.

Soap made from pure palm oil.







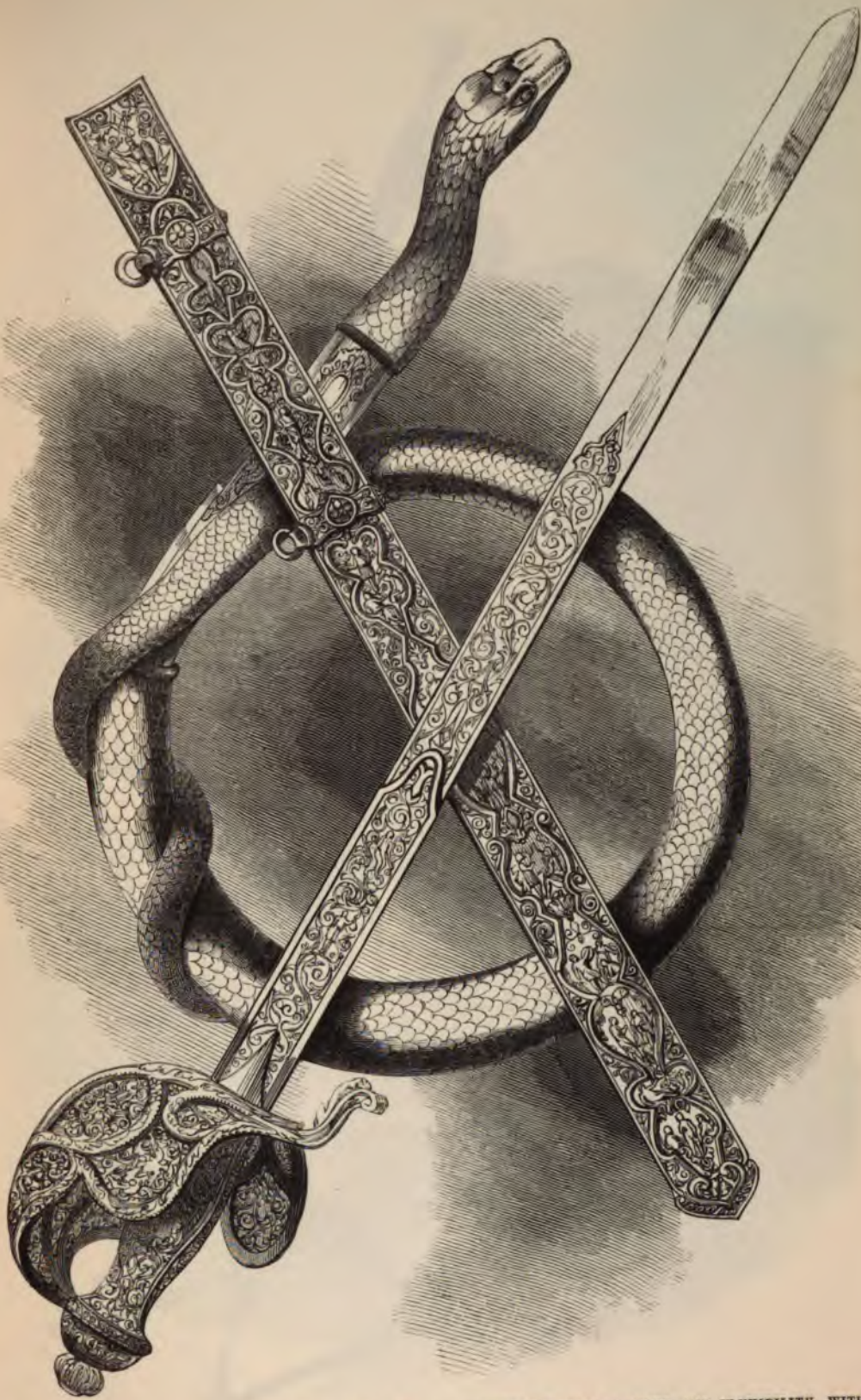


127.

AN ENAMELLED AND GILT DAGGER AND CASE, AND SERPENT FORM SWORD,
FROM THE ROYAL ORDNANCE, TOLEDO.

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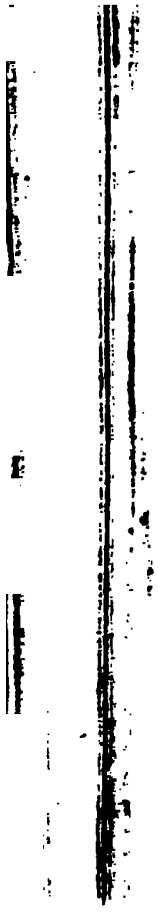


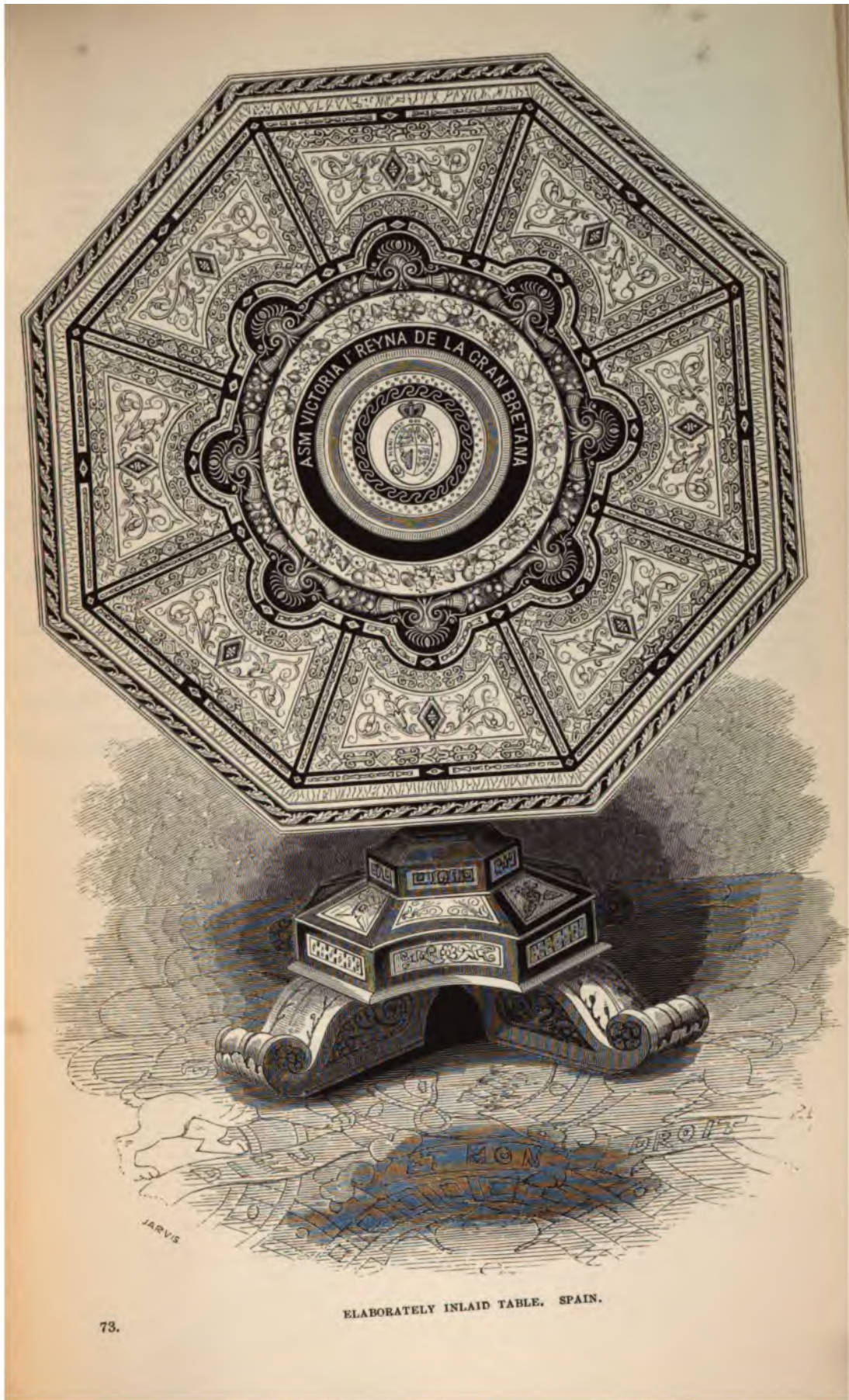
126. A STRAIGHT TOLEDO SWORD, AND A SWORD OF EXTRAORDINARY TEMPER AND FLEXIBILITY, WITH A METALLIC SCABBARD IN THE FORM OF A SERPENT. M. DE YSASI. TOLEDO.

1000



251. HARP-GUITAR AND STAND. M. T. GALLEGOS, SPAIN. INLAID SECRETAIRE. M. MEDINA, SPAIN.





ELABORATELY INLAID TABLE. SPAIN.

Vertical lines of text, possibly bleed-through from the reverse side of the page.

- 276 **MIE BROTHERS, Barcelona**—Manufacturers.
Lace trimmings.
- 280 **ROYAL ORDNANCE, Trubia**—Manufacturers.
A bust, in bronze, of Her Majesty, the Queen of Spain.
A bust, in iron, of His Majesty the King of Spain, as taken from the mould.
- 281 **NAURI (JUAN BAUTISTA), Madrid**—Producer.
1 Group of gilt bronze figures, representing an incident at a bull-fight.
2 Bronze group, representing the same.
3 Bronze figure, representing a Picador.
- 281A **GUTIERREZ DE LEON, D. RAFAEL, Malaga**
—Designer and Producer.
Three terra-cotta figures.
- 282 **PÉNA (D. ANTONIO), Madrid.**
Terra-cotta figure.
- 283 **CONTRERAS (RAFAEL), Aranjuez, Madrid.**
Arabesques, details from the Alhambra.
- 284 **YSABI, D. M. DE, Chiclana.**
Alcaraza, or porous water-bottle.
- 285 **JIMENEZ (D. MANUEL), Madrid.**
Two wood mosaic pictures.
- 286 **PASCUAL Y ABAD (D. ANTONIO), Valencia**—
Producer.
Paintings for fans.
- 287 **MITJANA (D. RAFAEL), Malaga**—Producer.
Fans, and paintings for fans.
- 289 **MATA AGUILERA (D. JUAN DE), Madrid.**
Model of the bull-fighting circus of Madrid (one-half of the interior), represented nearly full of spectators; with 4,000 wooden figures, exhibiting in the arena different incidents of a bull-fight. In the seats of the amphitheatre, in the foreground, are figures in the different provincial costumes of Spain; and outside are various sellers of fruits, fans, and other articles; with boys' games, visitors to the circus, &c.
- 290 **CARBORELL, M., Alcoy.**
Travelling wrapper, in the Jerezaro style, with wallet.
- 291 **PORTILLA, —, Seville.**
Samples of wheat and semouli.
- 292 **ARRIEDA, —, Habana.**
Samples of white sugar.
- 293 **BIENAIMÉ, A., Sculptor, 22 Newman Street.**
Marble group: Love Triumphant.
- 294 **PORTILLA, —, Seville.**
Wheat and semisole.
- 295 **ARRIETA, —, Havana.**
Samples of white sugar.
- 300 **KEENE, WILLIAM, 42 Cornhill**—Proprietor.
Case containing geological specimens from the Western Pyrenees.
[The Western Pyrenees consist chiefly of cretaceous deposits, with a central range of crystalline and metamorphic rocks. The Bunter sandstein occurs at intervals, and towards Argelles the oolitic series is represented. The triassic rocks occupy the southern or Spanish, and the oolitic and cretaceous, the northern or French side of the central ridge.—D. T. A.]





SOUTH AREAS, L. 69, 70; M. 69.

Commissioner in London, CHARLES TOTTIE, Esq., Crosby Square.

THE universal reputation of Sweden for its iron and steel, renders the specimens exhibited in support of its celebrity the more valuable and attractive. As many as thirty of the exhibitors of these countries have sent specimens of iron and steel, either in a raw or in a manufactured state. One of the causes of the superiority of the Swedish iron for conversion into steel appears to be this—that the ore employed is the magnetic iron ore. But an equally important cause unquestionably lies in the fact, that mineral fuel is not employed in the process of smelting, the fuel used being charcoal, or wood, or both. Carbon is thus supplied to the iron in a form much more pure, and possibly much more readily capable of entering into chemical combination than in its state as coke or coal. The production of iron being of great importance to the prosperity of the country, it has been the subject of various public enactments, and is carried on under the direct superintendence and sanction of a Central Board. Licences to manufacture certain quantities of iron annually are granted, and every furnace and iron forge pays an annual duty to the crown. The amount permitted to be manufactured is regulated according to the means of the iron master to obtain the requisite supply of charcoal without public detriment or inconvenience from its consumption. The annual amount of iron made in Sweden is about 90,000 tons, of which about 70,000 are exported. A good collection of ores from Christinchamn and Bofors is exhibited. It includes also specimens of steel and of toughened iron. Other exhibitors show specimens indicative of the extreme toughness and resistance to fracture communicated to their iron. There is also a large collection of cutlery. Of the textile manufactures, are exhibited specimens of flax, silk, and woollen fabrics and materials. Some models of flowers in wax are also interesting. Specimens of native silver from the mines at Kongsberg, in Norway, indicate the possession of an available source of this valuable metal. Chrome iron ores and the chemical product from them, bichromate of potash, are exhibited. Interest is also excited by some of the homely domestic productions of the Swedish and Norwegian peasantry, whose long winter nights give time for such occupation, and preclude out-of-door work for more than a few hours. The magnificent vase in the centre avenue, the large cannon, and the specimens of ornamental furniture, &c., recently arrived, must also attract much attention.—R. E.

1 LAGERHJELM, PETER, *Christinchamn and Bofors, Sweden*—Producer and Proprietor.

Specimens of steel-iron and tough-iron:—

Twenty specimens: including the rock in which the mine is situated; the leading stone; the mineral intermixed with the ores; the ores and the analysis of them, showing their constituent parts, as to quantity and quality; the pig iron; the scoria; the blooms and the bars.

The following is a detailed catalogue of the above specimens, with notes respecting the method of manufacturing; mineralogical formulæ of the scoria obtained from the high furnace, &c.:—

Swedish bar-iron from peroxide of iron, and from magnetic iron-stone. The ores occur in beds, situated in mica slate; the rock being gneiss.

1 Mica slate. In the mine called Herr Grufvan of

Dalkarlsberget, is commonly found between this mica slate and the ore, a kind of,

2 Petrosilex. In some places there is a rock between the ore and the petrosilex, consisting of

3 Slaty mica and chlorite, in the Swedish called *sköl* (cleft).

4 Hornblende of the texture of actynolite (Jameson's system of mineralogy), in some places preventing the *sköl* from touching the ore. No. 4 occurs also disseminated, as kernels, glandules, kidneys, veins (Swedish *körtlar*), in the bed of ore.

5 The ore of Herr Grufvan, intermixed with the rock.

6 The ore as used in the high furnace. Magnetic iron-stone, from Herr Grufvan of Dalkarlsberget.

Constituent Parts.	
Silica	9.187
Alumina	1.442
Lime	0.323
Manganese	2.564
Protoxide of manganese	0.075
Magnetic oxide of iron	86.512 con. 62.613 metal.

100.103

7 Petrosilex, from the mine Nya Flintan of Dalkarlsberget.

8 Mica and chlorite (Swedish *sköl*) from the mine Nya Flintan of Dalkarlsberget.

9 Ore and rock from Nya Flintan of Dalkarlsberget.

10 The ore as used in the high furnace. Magnetic iron-stone, from the mine Nya Flintan of Dalkarlsberget.

Constituent Parts.	
Silica	9.043
Alumina	4.802
Lime	0.873
Manganese	3.349
Protoxide of manganese	0.218
Magnetic oxide of iron	82.234 con. 59.516 metal.

100.519

This ore occurs in great abundance.

11 The ore as used, from the mine Lang Grufvan of Dalkarlsberget, being a peroxide of iron.

Constituent Parts.	
Silica	8.380
Alumina	1.115
Lime	0.373
Manganese	3.825
Protoxide of manganese	0.104
Peroxide of iron	86.415 con. 60.49 metal.

100.212

The bed of this ore being newly found, the stock is unknown as to its extent.

12 The ore as used from the mine Mossaberget, being a peroxide of iron. The bed is of great extent.

Constituent Parts.	
Silica	25.905
Alumina	1.888
Lime	0.442
Manganese	1.154
Protoxide of manganese	0.032
Peroxide of iron	71.358 con. 49.96 metal.

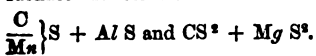
100.779

13 Pig-iron:—

From the ores, No. 6 and No. 10	83.0
From the ore, No. 12	17.0
	100.0
Limestone, not quite free from petrosilex	7.8
Protoxide of manganese	1.9

In the roasting furnace, small bits of ore from the mines of Persberg (called *Waskmalm*) are used, to direct the heat.

14 Scoria, belonging to the pig of No. 13. According to the constituent parts of the substances put in the high furnace the formulæ of this scoria ought to be—



15 Pig-iron from:—

Magnetic ironstone, of No. 6 and No. 10	47.1
Peroxide of iron of No. 11	45.3
Peroxide of iron of No. 12	7.6
	100.0
Limestone of the above description	7.9
Protoxide of manganese	1.85

16 Scoria, belonging to the pig No. 15.

17 Middle bloom from the pig No. 13, refined in the English manner.

18 Bar from the pig-iron of No. 13, the blooms being welded in the flame of charcoal and wood.

19 Middle bloom from the pig-iron of No. 15, refined as above stated.

20 Bar from the pig-iron of No. 15, the blooms being welded in the flame of charcoal and wood.

Mark: C.B.F., Gaswaldt. Agent: C. F. Wern, Esq., Gothenburg.

[The Swedish iron and steel has long been esteemed; and in this series we have exhibited all the conditions to which that superiority is due. The magnetic iron ore is furnished by nature in abundance. In England this ore is only known to occur in two localities—one near Penryn, in Cornwall; and the other on Dartmoor, in Devonshire. This, and the use of charcoal and wood in the smelting processes, appears to be the chief cause of the excellence of the iron of Sweden.—R. H.]

2 RETTIG, CARL ANTON, *Gefle and Kihlafors*, Sweden—Producer and Manufacturer.

Specimens of iron ore from the Hammarin mines, in the district of Roslagen, not far from Stockholm.

Two specimens of pig-iron from the same ore.

Three musket-barrels, completed at the Royal Musket Factory.

Specimens of hardened steel from the same iron.

Specimens of polished work, in the same steel.

3 BLAST FURNACE OF GREKASAR, *Orebro and Grekasar*, Sweden—Producers.

a, b, c, d. Specimens of iron ore, in use at the Blast Furnace of Grekasar, province of Nerike.

Specimen of pig-iron as thence produced, from a set of $\frac{1}{4}$ d. $\frac{1}{4}$ a. $\frac{1}{4}$ c. $\frac{1}{4}$ b.

Specimen of bar-iron, manufactured from the said pig-iron at the forges of Stadna and Finna.

Specimen of the same bar-iron twisted into a spiral.

4 HELLEFORS IRON WORKS, *Orebro and Hellefors*, Sweden—Producers.

a, b, c, d Specimens of iron ore in use at the blast furnace and foundry of Hellefors.

Scoria and pig iron from the same furnace.

5 OSTERBY IRON WORKS, *Upsala and Osterby*, Sweden—Producers (Baron Tamm, Proprietor).

Specimens (A, B) of iron ore from Dannemora mines.

Specimens (C, D) of pig-iron and bar iron from Osterby.

Specimens (E, F) of converted steel from Osterby.

Specimens (G, H) of scoriae from Osterby.

6 MOTALA IRON AND ENGINE WORKS, *Motala, Ostergöthland*, Sweden—Manufacturers.

Round iron rolled $\frac{1}{8}$ and $1\frac{1}{2}$ inch.

Square iron, $\frac{1}{8}$ and $\frac{1}{2}$ inch.

Tubes for steam-engine boilers.

Frames for iron vessels, $3\frac{1}{2}$ and $2\frac{1}{2}$ inch.

Edges for steam-engine boilers, 3 and $1\frac{1}{2}$ inch.

Puddled iron, not balled.

Plates from unballed puddled iron.

Plates from balled puddled iron.

Pig iron for castings.

7 FLOOD, JØRGEN, *Porsgrund*, Norway—Producer.

Specimens of iron ores and bar iron, marked $\begin{matrix} B & C \\ \text{---} & \text{---} \\ I & F \end{matrix}$

These specimens were derived from Bolvigs Ironworks, near Porsgrund.

- 8 HOK, HERMANN, *Dronheim, Norway*—Manufacturer.
Specimens from the chrome manufactory near Dronheim.
- 9 TUNABERG COBALT WORKS, *Sweden*—Producers.
1—3 Crystals of cobalt ore.
4 Washed cobalt ore.
5 Oxide of cobalt.
6 Chaux metallique (calcinated).
The cobalt ore obtained at Tunaberg, in Sweden, is highly esteemed as a source of the oxide of cobalt employed in communicating a blue colour to glass and earthenware. It consists, by analysis, of—
Cobalt . . . 44
Arsenic . . . 55.5
Sulphur . . . 0.5
100.0
- [This ore is of the gray variety, and the crystals are extremely brilliant, resembling steel. The cobalt ore is prepared by pulverising and washing, and subsequently by calcination in a reverberating furnace. By this it is oxidised, and it is then finely sifted and mixed with sand when required for use. Smalt is, properly speaking, simply a blue glass in powder, its colour being derived from the admixture of a small portion of oxide of cobalt.—R. E.]
- 10 ZETTERBERG, CHRISTIAN, *Eskilstuna, Sweden*—Manufacturer.
Specimens of sabres and swords.
- 11 IRONMONGERY from *Eskilstuna, Sweden*.
HALLEBERG, L. J.—Manufacturer.
1—26 Steel cutters.
27 Brace, with bits.
HELJESTRAND, C. V.—Manufacturer.
28 Razors.
LUNDQVIST, A.—Manufacturer.
29—33 Cutlery.
OESTERBERG, C. G.—Manufacturer.
34, 35 Cutlery.
SVALLING, F.—Manufacturer.
36—42 Cutlery.
OEBERG & Co.—Manufacturers.
43—50 Files and rasps.
RUBBERG, C. G.—Manufacturer.
51—56 Rasps.
THUNBERG, C.—Manufacturer.
57—62 Files and rasps.
HAGLUND, E.—Manufacturer.
63, 64 Files.
HEDLUND, J.—Manufacturer.
65—82 Padlocks.
BJÖRK, C. L.—Manufacturer.
83 Bench vice.
LUNDBERG, R.—Manufacturer.
84, 85 Locks.
ULANDER, F.—Manufacturer.
86, 87 Locks.
HALLENIUS & Co.—Manufacturers.
88—90 Locks.
91—106 Sundry ironware.
WALÉN, J.—Manufacturer.
107, 108 Sundry ironware.
SPÅNGBERG & Co.—Manufacturers.
109—117 Sundry ironware.
- 12 STEEL WARES, polished, etched, and gilt, by various makers at *Eskilstuna*.
1 Paper scissors, polished.
2, 3 Rules, etched and gilt.
Paper knives and scissors, gilt.
Steelplate, with a view of the Royal Palace, Stockholm.
- 12A STILLE, ALBERT, *Stockholm*—Manufacturer.
One pair of razors, etched and gilt.
One pair of razors, etched.
One paper knife, etched and gilt.
- 13 GODGÅRD FORGES, *Norrköping and Godgård, Sweden*—Manufacturers.
Box containing brads.
- 14 VIBERG, A. P., *Falun, Sweden*—Manufacturer.
Chemist's balance, with gramme weights.
Universal compasses. Drawing instruments.
- 15 LITTMAN, E., *Stockholm, Sweden*—Manufacturer.
Instrument for examining the bore of guns and determining the amount of its elevation when found deficient.
Chemist's balance, with gramme weights.
Universal compass. Drawing instruments. Miners' quadrant. Levelling instrument, with stand. Microscope.
- 16 GULDSMEDSHYTAN MINES, *Linde and Guldsmedshytan, Sweden*—Producers.
Specimens of silver and lead ores.
- 17 JOHANSSON, J., *Stockholm, Sweden*—Manufacturer.
Specimens of stearine.
Specimens of stearine candles.
Specimens of moulds for casting.
- 18 LAMM, S. L., *Stockholm, Sweden*—Manufacturer.
Two large spermaceti candles.
- 19 WOOLLENS from *Norrköping, Sweden*.
BERGEWALL, F.—Manufacturer.
1 Specimens of broad-cloth.
2 Specimens of duffel.
SÖDERBERG & AROSENIUS—Manufacturers.
3 Specimens of blue cloth, dyed in the wool.
LANDMARK, T.—Manufacturer.
4 Specimens of brown cloth.
MALMGREN, C. T.—Manufacturer.
5 Specimens of mixed cloth.
- 20 Various samples of Swedish wool.
- 21 Specimens of flax, water-retted; the same, scutched by hand; the same, unhackled. From Angermanland in the north of Sweden.
[The term water-retted, as applied to flax, implies that it has undergone a process of fermentation and partial putrefaction in water. This process is adopted with a view of decomposing the gluten of the stalk, so as to insure the ready separation of the fibres. In order to accomplish it the flax is bound in sheaves and placed in water for a proper time.—R. E.]
- 22 Specimen of flax thread, spun by a girl thirteen years of age, in Angermanland.
- 23 Piece of linen, such as is made in hand-looms by the peasantry in Angermanland.
- 24 CASPARSSON & SCHMIDT, *Stockholm, Sweden*—Manufacturers.
Specimens of satin, moire façonnée, gros de Naples (coloured and black), shawl, and a neck-handkerchief.

- 25 MEYERSON, L., *Stockholm, Sweden*—Manufacturer.
Specimens of brocatelle, from silk produced in Sweden.
Specimens of taffetas quadrillé.
Specimens of gros de Naples.
Various shawlettes.
- 26 Samples of cotton goods, made in hand-looms, by the peasantry in several districts of the province of Westergöthland, and sold without any dressing, to the annual amount of from 8 to 10 millions of yards.
- 27 FÜRSTENHOFF, EMMA, *Stockholm, Sweden*—Manufacturer.
Specimens of artificial flowers, executed in wax and other materials, for the purposes of ornament, as well as botanical study; viz.:—
1 *Dielgytra spectabilis* (Nat. Order, *Fumariaceæ*); country, China.
[It is stated that this magnificent plant has only blossomed twice in Europe; once at Chatsworth, the seat of his Grace the Duke of Devonshire; and once in March last, in the gardens of Mr. Martin, at Paris.]
- 28 HAMRÉN, SOPHIE, *Halmstad, Sweden*—Designer and Manufacturer.
Needlework embroidery on muslin, representing the royal palace of Ulriksdal, near Stockholm.
- 29 HORN, Mrs., *Halmstad, Sweden*—Designer and Manufacturer.
An embroidered pocket-handkerchief.
- 30 ALMGREN, K. A., *Stockholm, Sweden*—Manufacturer.
A portrait of King Oscar, woven in silk.
- 31 HILLMAN, ADOLPH, *Gefle, Sweden*—Proprietor.
Statue in marble, representing a shepherd. This statue was lately executed at Rome by Mr. Molin, a Swedish sculptor, and is represented in the annexed engraving.



Statue of a Shepherd. Executed by M. Molin: exhibited by A. Hillman.

32 DE LIEWEN, Madlle. H., *Stockholm, Sweden.*

Portrait of Jenny Lind, sculptured in pasteboard by exhibitor.

33 JOHNSDOTTER, CHRISTINA MARGARETA, *Hernösand and Sidsjö, Sweden*—Manufacturer.

A skein of flaxen thread, 4,000 Swedish ells in length, spun by the exhibitor, a peasant's daughter in the district of North Angermanland, from the flax grown in the parish. Exhibited for its extraordinary fineness and even appearance. Notwithstanding its great length, it weighs less than half an ounce.

34 KONGSBERG, SILVER WORKS OF, *Norway*—Producers.

Thirty-two specimens of silver in its different stages, from the mines and works of Kongsberg, in Norway, belonging to the State.

(A) Samples of the silver lode, viz.:

One of 558 marks, estimated to contain 214 marks of fine silver.

One of 323½ marks, estimated to contain 86 marks of fine silver.

(B) Samples of silver and slime from the Stampworks at Armen and the King's Mine, viz.:

Middle-ore silver, containing about 87 per cent. fine silver, weight ¼ mark.

Stamp-ore silver, same per centage and weight.

Ore (malin) silver, same per centage and weight.

Middle-ore slime, containing fine silver on an average 1½ per cent.

Stamp-ore slime, containing fine silver on an average 1½ per cent.

Stamp-ore buddle slime, containing fine silver on an average ¾ per cent.

Godtslug (good slime), containing fine silver on an average ¾ per cent.

Ringtslug (poor slime), containing fine silver on an average ¼ per cent.

Buddle slime, containing fine silver on an average 7/53 per cent.

Slime, containing fine silver on an average 1/10 per cent.

(C) Sundry samples of native silver numbered 1 to 19, weight 67 7/8 marks.

(D) Silver bar, No. 2, of the first smelting of 1851, weight 128 3/4 marks. Contents of fine silver 127 marks, 5 lod, 16 1/2 grains.

35 LOVENSKIOLD, —, *Skien and Fossum, Norway*—Producer and Manufacturer.

Specimens of iron ore and wrought iron produced from the former, both from Fossum Iron Works near Skien. The iron bars have been bent and twisted when cold, and the strength of this iron has been tested, the result being that a bar whose section is one-tenth of an inch square bore a longitudinal tension equal to 1,700 pounds without fracture.

36 TRESCHOW, —, *Laurvig and Fritzoë, Norway*—Manufacturer.

Three iron bars from Fritzoë Ironworks, near Laurvig. These bars were bent and drawn in knots when cold, and are exhibited on account of the strength, toughness, and density of the material.

37 RORAAS COPPER WORKS, *Røraas, Norway*—Producers.

Specimens of copper from the works.

38 GARMANN, H. C., *Drontheim, Norway*—Producer.

Specimens of chromate of iron, raw and purified by washing and stamping.

[Chromate of iron occurs as a native ore in several parts of the world, and forms the only available source for the elimination of the important element chromium—in com-

bination generally with potash for the purposes of commerce. The ore is reduced by being crushed, and afterwards mixed with nitrate of potash and calcined. Chemical combination between the potash and chromic acid then takes place, and the bichromate of potash is separated from the mass by washing in water, in which it is very soluble. On evaporation of the solution most brilliant crystals are developed. This substance is largely employed in the arts of dyeing and calico printing.—R. E.]

39 LEEREN MANUFACTORY, *Drontheim and Leeren, Norway*—Manufacturer.

Specimens of bichromate of potash from the factory.

40 KONGSBERG MANUFACTORY OF ARMS, *Kongsberg, Norway*—Manufacturer.

A musket as made for the soldiers of the Norwegian army.

41 TOSTRUP, JACOB, *Christiania, Norway*—Proprietor.

Specimens of pearls found in different places on the coast of Norway, especially near Mandal and Stavanger, and collected by the exhibitor. The pearls are distributed in three small boxes, containing respectively 34, 66, and 24 pearls, and 1 shell.

42 ALNER, Madlle ANNA, *Söderhamn, Sweden*—Designer.

Portraits in needlework, representing—

1 Her Majesty Queen Victoria.

2 His Majesty King Oscar.

3 His Grace the Duke of Wellington.

43 HJULA QUARRY, *Christiania and Hjula, Norway*—Producers and Manufacturers.

Vase, boxes, knifehandles, &c., cut in various kinds of stone. Samples of stone.

44 THESEN, N. P., *Christiania, Norway*—Proprietor.

Various objects carved in wood by the native peasantry viz.:

Bucket; oval tub with cover; tobacco-box; boxes; jugs; spoons; clasp knives; caddy; paperweight; and tumbler.

The accompanying Plates 229 and 230 represent these objects.

Box carved in sandstone and knife-belt, of Christiania manufacture.

Clasp-knife, with stone handle; board, with pressed flowers.

45 ROSENKILDE, MAJOR CHRISTOPHER, *Christiansand, Norway*—Inventor.

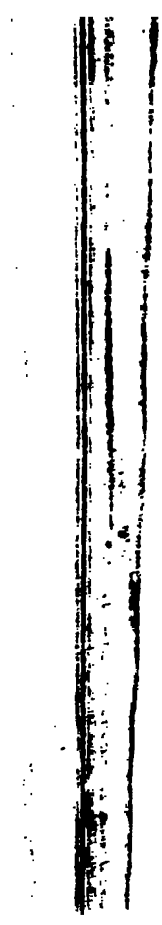
Safety spring window, requiring no lines or weights.

[This fastening, while it is perfectly secure against the possibility of persons from without opening up the sash for the purpose of entering the house, has also the additional advantage of presenting such an obstacle to children opening the window on the inside as to make it a valuable addition to the windows of nurseries. It is, at the same time, easily opened by grown persons. It consists of a spring which is fitted into a recess made in the edge of the style of the sash; the free end of the spring has connected to it a projecting piece which takes into a catch formed in the window frame, by which the sash is immovably fixed until the projecting piece is pressed or lifted out of the catch, for which purpose the end of the spring projects a small distance beyond the surface of the sash-frame, so that by applying the finger to that projection the sash-frame is then free to be moved either up or down as the case may be.]



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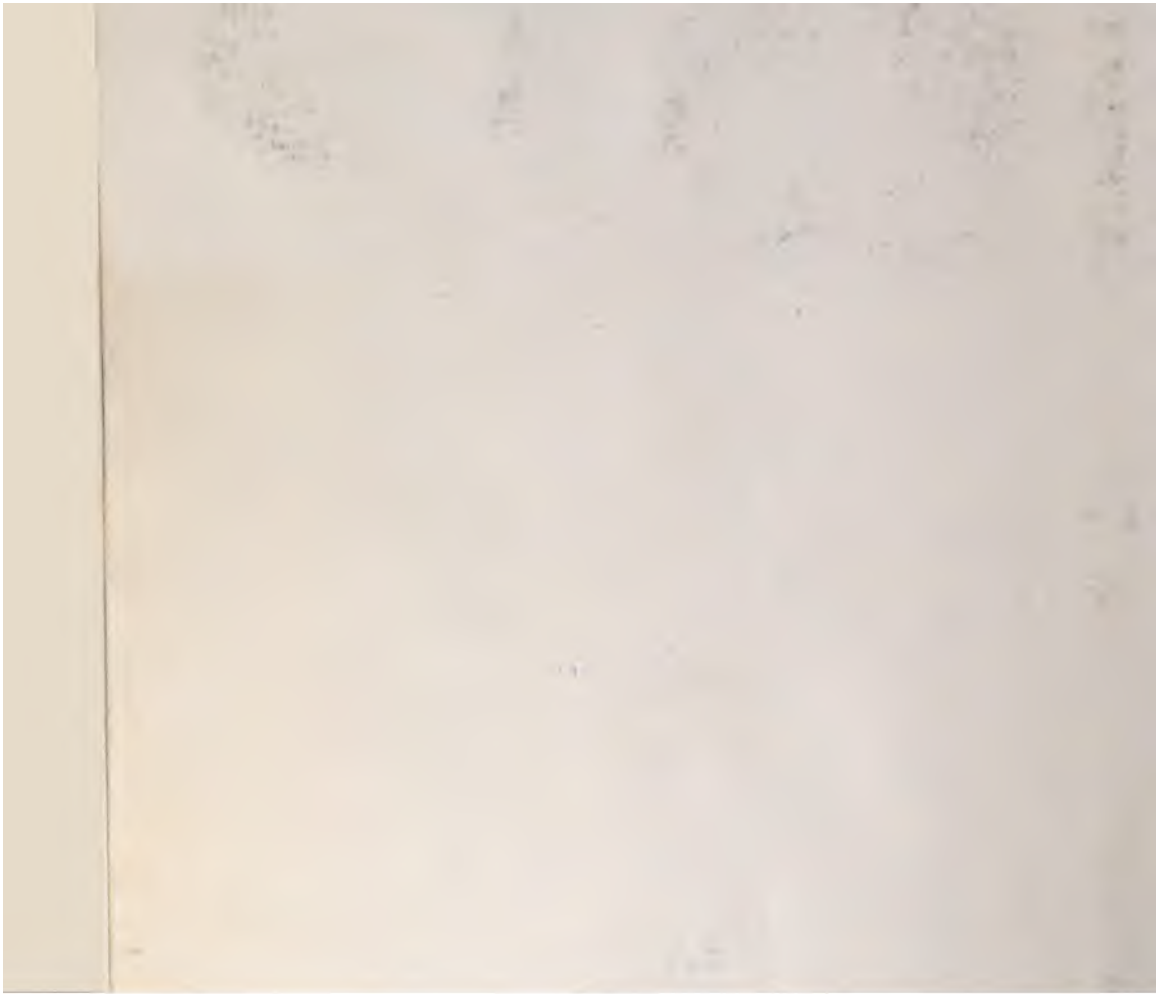
- 46 **TOSTRUP, J.**, *Christiania, Norway*—Manufacturer.
Ornamental box of chiselled silver, intended to hold consecrated wafers for the altar service.
- 47 **ELFDALH'S PORPHYRY WORKS**, *Sweden*—Producer and Manufacturer. (Capt. P. W. P. Wallis, R.N., *Homebush, Southsea*—Proprietor.)
Two porphyry vases, on pediments of polished red granite; executed at the above works in Sweden.
- 48 **DANCKWART**, Lieut., *Wernumo, Sweden*—Artist.
Portrait of Jenny Lind, carved in ivory.
- 49 **PALMGREN, P. F.**, *Stockholm, Sweden*—Manufacturer.
Silver drinking-can.
- 50 **AHLBOBN, C.**, *Stockholm, Sweden*—Designer and Manufacturer.
Picture frame, carved in wood, intended to surround a sculptured figure of the Saviour, and representing in its principal parts objects in connexion with the subject of the sculpture, namely—above, flowers, as an emblem of Patience; to the left, angel with rose-branch, symbolical of Love; to the right, angel with lilies, representing Innocence; underneath, ivy and palm leaves, denoting Eternity and Peace.
- 51 **HIS MAJESTY THE KING OF SWEDEN**—Proprietor.
Colossal urn of porphyry, manufactured at the porphyry works of Elfdahl, in Sweden.
Table, with inlaid top, composed of different descriptions of Swedish stone.
- 52 **WAHRENDORFF, M. VON**, Baron, *Akers Foundry, near Mariefred, Sweden*—Manufacturer.
Seventy-two-pound bomb cannon, with an invention for introducing the charge from behind; and its carriage, made of iron. This kind of ordnance has been selected to mount the fortress of Waxholm, at the entrance to Stockholm from the sea. The specimen exhibited has been duly tested.
Six-pound field cannon, Swedish model.
Six-pound field cannon, Danish model.
- 53 **WEGELIN, J.**, *Stockholm, Sweden*—Inventor and Proprietor.
Coach, in the construction of which several new inventions have been adapted; such as the wheels being without naves, the axletrees moveable, and the turning effected in an eccentric curve by the fore-carriage.
Gig, also with new inventions introduced in its construction. Seven spiral springs for carriages.
- 54 **NORMAN, —**, *Stockholm, Sweden*—Manufacturer.
Sledge, with apron, covered in bearskin.
- 55 **KREUGER**, Admiral, *Stockholm, Sweden*—Inventor.
Wind-meter, constructed by the exhibitor.
- 56 **BOLINDER, J. & C.**, *Stockholm, Sweden*—Manufacturers.
Two kitchen-ranges, of iron. Ship's cabouse, of iron. Ironing oven, with flat irons appertaining.
- 57 **BOHMAN, E. J.**, *Stockholm, Sweden*—Manufacturer.
Etager, of Jacaranda, with plate-glass back.
- 58 **STENSTRÖM, P. A.**, *Stockholm, Sweden*—Manufacturer.
Dressing bureau, with polished ornaments on a ground.
- 59 **MALMQVIST, A.**, *Stockholm, Sweden*—Manufacturer.
Dressing bureau, with inlaid zinc ornaments.
- 60 **DUMBATH, H.**, *Stockholm, Sweden*—Manufacturer.
Loo table, with inlaid ornaments in different metals.
- 61 **EDBERG, C. M.**, *Stockholm, Sweden*—Manufacturer.
Writing table, of Jacaranda wood, ornamented, and with a novel contrivance for locking it up.
- 62 **ROSENWALL, P.**, *Stockholm, Sweden*—Manufacturer.
Grand pianoforte.
- 63 **SJÖBLOM, C. G.**, *Stockholm, Sweden*—Manufacturer.
Painted table, china pattern.
- 64 **JOHNSON, A.**, *Stockholm, Sweden*—Manufacturer.
Work-table in papier maché.
- 65 **EHRENBERG, J. F.**, *Stockholm, Sweden*—Manufacturer.
Spinning-wheel, for double spinning, of measele birch.
- 66 **MÖLLENBERG, G.**, *Stockholm, Sweden*—Manufacturer.
Candlestick, with two figures, in chiselled silver, with glass painting.
- 67 **FOLCKER, G. F.**, *Stockholm, Sweden*—Manufacturer.
Salver (tea-tray), in chiselled silver.
Flower vase, in silver filigree work.
Drinking can, in embossed silver, representing a scene from Bellman.
- 68 **PALMGREN, P. J.**, *Stockholm, Sweden*—Manufacturer.
Inkstand in embossed silver.
- 69 **BERGSTRÖM, J. W.**, *Stockholm, Sweden*—Manufacturer.
Chandelier, for 42 lights, of chiselled bronze, gilt.
Two candelabras, with figures in the same material, for six lights each.
Two candlesticks, with figures in the same material, for four lights each.
- 70 **DJURSON, C.**, *Stockholm, Sweden*—Manufacturer.
Lamp of embossed brass.
- 71 **DAHLBOM, P. A.**, *Stockholm, Sweden*—Manufacturer.
Tea-urn of embossed brass. Three lacquered tea-trays.
Three lacquered bread-baskets.
- 72 **AHLBERG, O.**, *Stockholm, Sweden*—Manufacturer.
Tenor-horn, of embossed brass.
- 73 **AHLBECK, G. C.**, *Stockholm, Sweden*—Manufacturer.
Sword of gilt and damascened steel.
- 74 **WARODELL, L. J.**, *Stockholm, Sweden*—Proprietor.
Sixteen different pieces of etched and gilt-steel ware, manufactured in Sweden, such as paper-scissors, knives, rules, &c.
- 75 **KOCKUM, G.**, *Malmö, Sweden*—Proprietor.
Seven anvils, hammers, &c., of fine polished cast-steel.
- 76 **LIDBERG, A. G.**, *Stockholm, Sweden*—Manufacturer.
Twelve goldsmiths' and watchmakers' tools.
- 77 **BERGSTRÖM, J. W.**, *Stockholm, Sweden*—Manufacturer.
Bright filed picklock, for double lock.
- 78 **HOOK'S IRON WORKS**, *Småland, Sweden*.
Double-barrelled gun, with percussion lock, and engraving, made by a smith's apprentice, at the above place.
- 79 **HAGSTRÖM, —**, *Stockholm, Sweden*—Manufacturer.
Brace of pistols, for mark-shooting.

- 80 BERGQUIST, —, *Stockholm, Sweden*—Manufacturer.
Three models of the Swedish artillery's cannon.
- 81 HULTMAN, J. A., *Stockholm, Sweden*—Manufacturer.
Two large lacquered balances.
- 82 NYSTRAND, —, *Eskilstuna, Sweden*—Manufacturer.
Pair of skates, with their straps, &c.
- 83 ERMAN, G., *Lessjöfors, Sweden*—Manufacturer.
Ten bundles of different kinds of iron wire.
- 84 STAHLBERG, —, *Eskilstuna, Sweden*—Manufacturer.
Twenty-four carpenters' tools.
- 85 BERGSTRÖM, J. W., *Stockholm, Sweden*—Manufacturer.
A chemical balance, with a load of 500 gram. It will give a decided indication of an excess of one-half of a milligramme in either of the scales.
Hydro-electric induction apparatus, with pile.
- 86 LINDEROTH, G. W., *Stockholm, Sweden*—Manufacturer.
Time-piece, striking the hours, in carved and gilt framework.
Fine cog-wheels for watches.
- 87 BERNHARDT, G., *Nyköping and Torp, Sweden*—Manufacturer.
Two carriage-wheels, and several parts of wheels, manufactured by machinery.
- 88 FOLCKER, J. P., & SON, *Stockholm, Sweden*—Manufacturer.
Ten pieces of silk damask, for furniture.
- 89 ALMGREN, K. A., *Stockholm, Sweden*—Manufacturer.
Piece of brocaded silk damask, for furniture.
- 90 MEYERSON, L., *Stockholm, Sweden*—Manufacturer.
Two pieces of silk stuff, for covering furniture.
- 91 CASPARSSON & SCHMIDT, *Stockholm, Sweden*—Manufacturer.
Two pieces of flowery gros de Naples.
- 92 HANEL, C. E., *Stockholm, Sweden*—Manufacturer.
Two boxes, containing sundry cordwainers' trimmings.
- 93 ELIASSON, L. J., *Norrköping, Sweden*—Manufacturer.
Six pieces of corduroy, for trousers.
- 94 STENBERG, G., *Jönköping, Sweden*—Manufacturer.
Three table-cloths and three dozen finger-napkins, made in hand-loom by exhibitor.
- 95 HAGA SILKWORM PLANTATION, *near Stockholm*.
Specimens of Swedish silk and cocoons.
- 96 LINDGREN, CONSTANCE, *Stockholm, Sweden*—Manufacturer.
Three pieces of embroidery, one of them being a portrait of King Osear.
- 97 HASSELGREN, L. C., *Stockholm, Sweden*—Manufacturer.
Writing-case and a box of water-colours.
- 98 JOHANSSON, J., *Stockholm, Sweden*—Manufacturer.
Case containing stearine candles. Stearine in cakes.
Case containing impressions in plaster.
- 99 HIETA, L. J., & MICHAELSON, J., *Stockholm, Sweden*—Manufacturer.
Sixteen packages of stearine candles.
Pot of elain soap. Bottle of sulphuric acid.
- 100 KULLGREN, C. A., *Uddewalla, Sweden*—Manufacturer.
Colossal monument of granite, in form of a cross, cut out of a single block; the stone remarkably fine grained, and exhibited as a sample of quality, of material, and of workmanship. (See objects outside the building, Eastern end to which the numeral refers.)
- 100A LUNDGREN, P. W., *Stockholm, Sweden*—Manufacturer.
Grain, syrup, vinegar, &c., prepared from potatoes.
- 101 SEYBOLT & Co., *Stockholm, Sweden*—Manufacturers.
Three sugar-loaves, with overturning-pan.
- 102 NORBERG & SÄTHER'S IRON MINES, *Sweden*—Producers.
Case containing specimens of ore.
- 103 BJÖRCKMAN, J. L., *Stockholm, Sweden*—Manufacturer.
Case containing boxes, little trays, &c., made of birch bark.
- 104 BECK, F., *Stockholm, Sweden*—Manufacturer.
Ten specimens of bookbinding.
- 105 SCHULDHEIS, A. E., *Stockholm, Sweden*—Manufacturer.
Case containing comb-makers' ware.
- 106 ERICSSON, A., & Co., *Stockholm, Sweden*—Manufacturers.
Four various hats.
- 107 ISOZ, J. P., *Stockholm, Sweden*—Manufacturer.
Twenty-one pairs of gloves, different kinds.
- 108 GULDA, J., *Stockholm, Sweden*—Manufacturer.
Paletot, lining of Swedish martin fur.
Cloak, lining of Swedish squirrel skins.
Three muffs, various. Fur cape.
- 109 FORSELL, D., *Stockholm, Sweden*—Manufacturer.
Stuffed silver bear skin, suitable for a mat to place under the writing table.
Fur coat, made of the skins of rein-deer calves, from Norrland.
- 110 CARLSSON, C. A., *Stockholm, Sweden*—Manufacturer.
Twenty-nine specimens of brushes.
- 111 ARONDAL'S MANUFACTORY, *near Gothenburg, Sweden*.
Seven rolls of paper-hangings.
- 112 STUBECKE, M., *Stockholm, Sweden*—Manufacturer.
Five pairs of boots and shoes, &c.
- 113 HEURLIN, —, *Stockholm, Sweden*—Manufacturer.
A quantity of playing cards.
- 114 WARDELL, L. J., *Stockholm, Sweden*—Proprietor.
Two pots, made of pot-stone, and mounted.
- 115 BRÖLING, J., *Stockholm, Sweden*—Designer.
Proof-sheet of Swedish bank-notes, designed and executed by the exhibitor.
- 116 KULBERG, V., *Stockholm, Sweden*—Manufacturer.
Chronometer.
- 117 UDDEHOLM'S COMPANY, *Wernland, Sweden*.
Three specimens of steel iron ore.











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